CDM Camp Dresser & McKee



Report

# Baldwin Park Operable Unit
# Pre-Remedial Design
# Groundwater Monitoring Program

## Draft Pre-Remedial Design Report

December 1996

**CDM** Camp Dresser & McKee Inc.

*environmental services*

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December 12, 1996

Mr. Wayne Praskins
Superfund Remedial Project Manager
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Subject: Transmittal of Pre-Design Groundwater Monitoring Program Report; Baldwin Park Operable Unit (BPOU)

Dear Mr. Praskins:

On behalf of the Baldwin Park Operable Unit Steering Committee (BPOUSC), enclosed are two copies of the subject report. The report has been prepared to fully address all of the objectives of the program, and in full conformance with the EPA-approved sampling and analysis plan.

As discussed with you during our meeting on Monday, December 9, this report also addresses all of the requested information from your letter of September and October. Furthermore, the majority of your questions in Monday's meeting are also addressed. Requests from Monday's meeting which are not incorporated into this report are as follows:

- Darcian flux calculations at Whittier Narrows
- Additional flux computations for 1993/1994 water year
- Particle tracking for the preferred containment scenario, in both plan view and in cross section, for the 12-year transient simulation.

Per agreement during that meeting, we will provide this information concurrent with our response to any comments you may have on this draft report.

If you have any immediate questions or comments, please do not hesitate to contact Don Vanderkar.

Sincerely,

David C. Chamberlin
Senior Vice President

cc: David Towell, CH2M Hill
Art Heath, RWQCB
Kirby Brill, SGBWQA
Don Vanderkar, Aerojet
Steve Richtel, Waste Management
Grant Ohland, Harding Lawson
Peter Quinlan, Dudek and Associates

DRAFT

# Baldwin Park Operable Unit Pre-Remedial Design Groundwater Monitoring Program

## Pre-Remedial Design Report

San Gabriel Valley
Los Angeles County, California

December 1996

*Submitted to:*

U.S. Environmental Protection Agency
Region IX

*Prepared for:*

San Gabriel Basin Water Quality Authority
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# Contents

# Contents

# List of Figures

# List of Tables

# 1

# Section One

# Draft - Section 1
# Introduction

## 1.1 Background

The overall objective of the pre-remedial design groundwater monitoring program described herein is to collect the additional data necessary to evaluate and design a treatment system for volatile organic compound (VOC) contaminated groundwater and to develop scenarios for extraction well configurations and pumping rates. This report presents the results of these analyses.

VOC contamination of the groundwater in the San Gabriel Valley was first detected in 1979 as part of environmental monitoring activities in Azusa. VOCs were used in large quantities at industrial facilities within San Gabriel Valley starting in the 1940s and their use continues to the present day. During the past twelve years, more than two-thirds of the 366 water supply wells within the San Gabriel Basin for which VOC data are available have shown detectable concentrations of VOCs; about one-quarter of the 366 wells have shown concentrations exceeding federal or state drinking water standards. In May 1984, the United States Environmental Protection Agency (EPA) named four areas of contamination (San Gabriel Areas 1-4) to the National Priorities List under the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), or Superfund program. The Baldwin Park Operable Unit (BPOU) is one of seven operable units in the San Gabriel Valley. The other operable units are Richmond, Whittier Narrows, Suburban Water Systems Bartolo Well Field, Puente Valley, El Monte, and South El Monte.

EPA's Remedial Investigation of the San Gabriel Basin began in 1985 with a basinwide groundwater sampling program known as the Supplemental Sampling Program. In subsequent years, EPA completed additional field sampling efforts, which have included sampling of inactive water supply wells, depth-specific sampling of water supply wells, and monitoring well installation and sampling. The results of EPA's sampling efforts are summarized in several EPA documents:

> *Draft Technical Memorandum, Well Logging and Depth-Specific Sampling, San Gabriel Area 5 Remedial Investigation.* May 22, 1990.
>
> *Technical Memorandum, Sampling of Existing Wells, San Gabriel Area 5 Remedial Investigation.* June 25, 1991.
>
> *Technical Memorandum, Well Logging and Depth-Specific Sampling, San Gabriel Area 5 Remedial Investigation.* December 2, 1991.
>
> *Interim Report of Remedial Investigations, San Gabriel Basin.* July 1992. (This report summarizes sampling activities from inception through 1989.)
>
> *Technical Memorandum, Sampling of Existing Wells—Second Round, San Gabriel Area 5 Remedial Investigation.* July 1992.

*Technical Memorandum, Area 5 Monitoring Well Installation and Sampling, San Gabriel Area 5 Remedial Investigation.* October 26, 1992.

EPA's Remedial Investigation has included the compilation and analysis of data collected by individual water purveyors, business and property owners, and the Main San Gabriel Basin Watermaster. Individual water purveyors regularly sample more than 50 water supply wells in the Baldwin Park area in accordance with federal and state drinking water requirements. Individual businesses and property owners have installed and sampled more than 25 groundwater monitoring wells in facility-specific investigations in the Baldwin Park area, most of which are overseen by the Los Angeles Regional Water Quality Control Board (LARWQCB). EPA works cooperatively with the LARWQCB to set investigation priorities and provide assistance at individual sites as needed. The Main San Gabriel Basin Watermaster has also sampled several inactive water supply wells in the Baldwin Park area.

EPA has summarized and analyzed the results of the Remedial Investigation, making use of data collected by EPA and others, in the Baldwin Park Operable Unit Feasibility Study Report, dated April 2, 1993. In March 1994, EPA issued the Record of Decision (ROD) for the BPOU. The ROD is summarized in Section 2.

# 1.2 Site Description

## *1.2.1 San Gabriel Basin*

The San Gabriel Basin is located in the eastern portion of Los Angeles County (Figure 1-1). The groundwater bearing area of the main basin is a piedmont plain covering an area of approximately 167 square miles (CDWR, 1966). To the north, the San Gabriel Basin is bounded by the San Gabriel Mountains. The basin is bounded to the southwest, south and southeast by a crescent-shaped system of low hills, separating it from the Coastal Plain. The hills making up the system, from west to east, are the Repetto, Merced, Puente, and San Jose Hills. The northwest boundary of the valley is formed by the Raymond Fault. A bedrock high starting at the San Gabriel Mountains passes south between San Dimas and La Verne, forming the northeastern boundary.

The primary surface water streams in the San Gabriel Valley are the San Gabriel River and the Rio Hondo. Both of these streams have their headwaters in the San Gabriel Mountains, from which they receive a major portion of their runoff. These streams exit the valley at Whittier Narrows, which is a narrow gap in the hills at the southern portion of the basin.

The principal water-bearing formations in the San Gabriel Basin are unconsolidated and semi-consolidated non-marine sediments. These sediments vary in composition depending on their location within the valley, but generally range in size from coarse gravel and boulders near the San Figure 1-1Gabriel Mountain front, to fine and medium grained sand, which may contain larger amounts of silt and clay, as the distance from the mountain front increases. The alluvial deposits reach a maximum depth of over 4,000 feet in the southwestern portion of the San Gabriel Basin (EPA, 1992); at the edges of the basin, they are only a few hundred feet thick. Of less importance with respect to the aquifer water-bearing capacity are marine sediments located in the Whittier Narrows area, and at the mouth of the Puente Valley. The basin is underlain by, and surrounded by, relatively impermeable bedrock.

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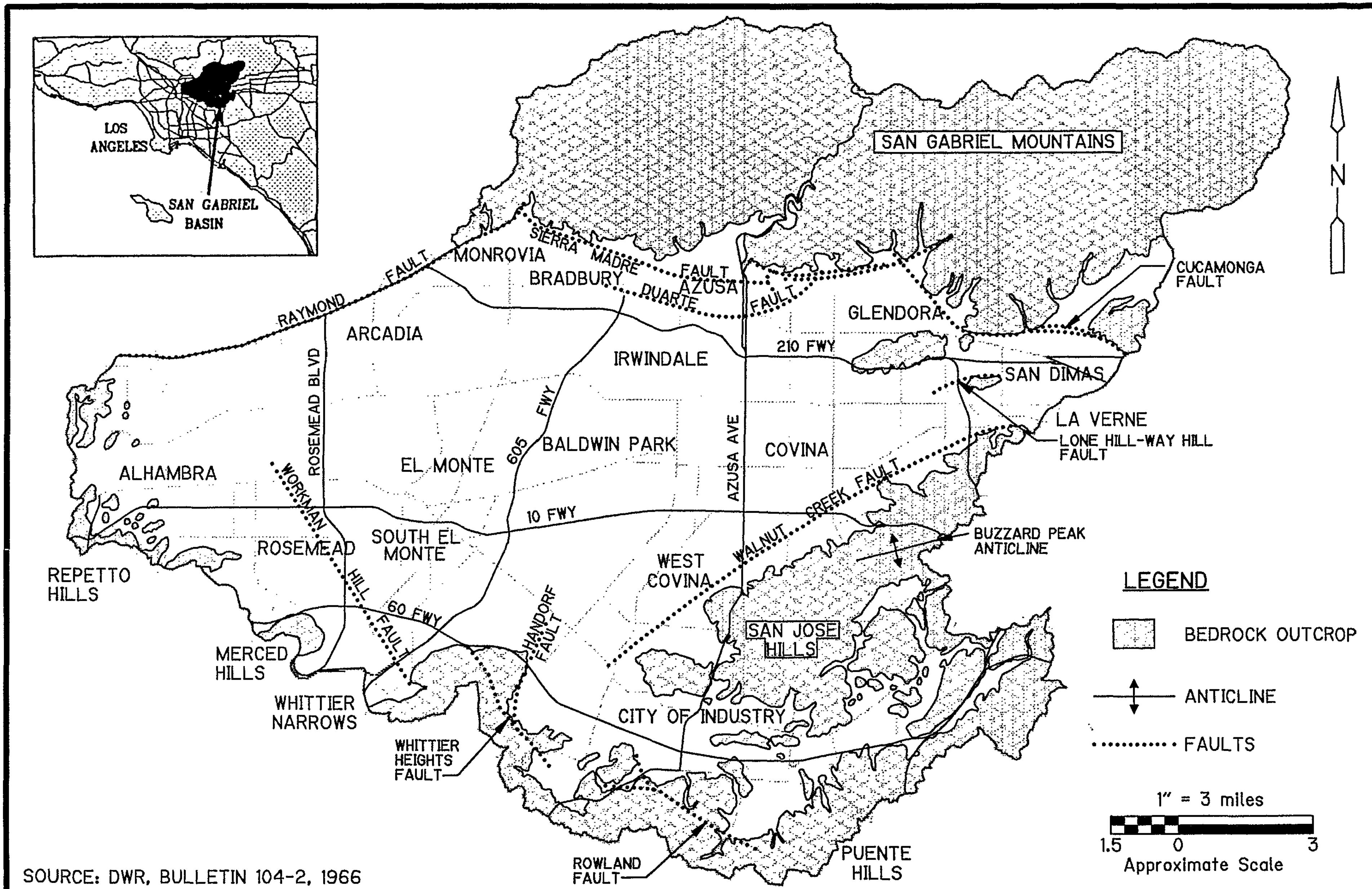


BALDWIN PARK OPERABLE UNIT PRE-REMEDIAL DESIGN

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## SAN GABRIEL BASIN STRUCTURE MAP

Figure 1-1

Within the San Gabriel Basin, several faults influence groundwater movement. Along the northern edge of the basin is the Sierra Madre Fault System which generally trends east to west. The Duarte and Cucamonga Faults, which belong to this system, generally impede groundwater flow from the Raymond Basin into the San Gabriel Basin. The impact of both of these fault systems is evidenced by the significant changes in water level elevation across the faults. Faults located in the eastern and southern sections of the basin include the Lone Hill-Way Hill Fault, the Workman Hill Fault and the Walnut Creek Fault. These faults also appear to impact groundwater movement to varying, but lesser degrees (CDWR, 1966).

There are both surface and subsurface inflows to the basin. Surface inflow is generated by precipitation on the tributary areas and enters the basin as either streamflow or overland flow. The primary area contributing to the surface inflow is the San Gabriel Mountains.

Subsurface inflow occurs across the Raymond Fault from the Raymond Basin, and from the Chino Basin to the east in the vicinity of San Dimas. Subsurface inflow also enters the main San Gabriel Basin from the Puente Basin. The only subsurface outlet from the basin is at Whittier Narrows.

A source of water to the groundwater system in the basin is natural and imported water which is recharged along reaches of the San Gabriel River, and at spreading grounds located throughout the San Gabriel Basin and in the San Gabriel Canyon. This recharged water is a significant source of water to the basin.

Groundwater flow in the central area of the basin generally flows to the south and southwest toward Whittier Narrows. This flow system is significantly influenced by the large municipal production wells and the recharge operations which are located in the central area of the basin. Groundwater in the eastern portion of the basin typically flows to the west and southwest toward the Whittier Narrows outlet. West of the Rio Hondo, groundwater flow is toward the large production wells in Alhambra and Monterey Park.

### *1.2.2 Baldwin Park Area*

The general geology, hydrogeology and water quality of the BPOU, as discussed in the ROD (EPA, 1994), are summarized in the following paragraphs.

Nearly all of the Baldwin Park area is fully developed for residential, commercial, and industrial use. The largest parcels of open land are active and inactive gravel pits and the Santa Fe Flood Control Basin.

The Sierra Madre Fault system passes through the northern portion of the Baldwin Park area, generally east/west, near the base of the San Gabriel Mountains. The system presents a low-permeability barrier that limits groundwater movement southward from the San Gabriel Mountains. In the BPOU area, groundwater levels north of the fault system are substantially higher than those to the south.

The surficial geology of the Baldwin Park area is composed of alluvial materials deposited by the San Gabriel River and its tributaries. Braided stream deposits occur along river channels; outcrops of stream channel deposits also occur along river channels and major tributaries. Floodplain deposits and undifferentiated alluvium cover the area between the stream channels. The underlying sediments are derived from the dominantly crystalline San Gabriel Mountains and are typically coarse-grained (e.g., sand, gravel, and boulders). These sediments are unconsolidated to partially consolidated nonmarine sediments of Recent and Pleistocene Age. They were deposited by fluvial and geomorphic processes associated with the San Gabriel River and its tributaries. Marine sediments, probably of Pleistocene and Pliocene Age, underlie some of the nonmarine sediments and are included within the groundwater system.

The northern and central portions of the Baldwin Park area consist almost entirely of massive gravel deposits. Lithologic evaluations of well logs indicate gravel deposits greater than 500 feet in thickness in the northern portions of the Baldwin Park area. These thicker layers tend to be mixed with 10- to 30-foot thick layers of clay and gravelly clay further south. The thickness of alluvial sediments is believed to range from a few hundred feet in the north to over 2,000 feet in the south in the Baldwin Park area (EPA, 1994).

Hydraulic conductivity estimates in the Baldwin Park area are some of the highest in the San Gabriel Basin. Aquifer test results from seven locations have provided hydraulic conductivity estimates between about 270 and 5,000 feet/day. These high hydraulic conductivity estimates indicate that very large extraction volumes are required to create significant changes in the flow of groundwater. Estimates of specific yield are 0.1 to 0.2, reflecting the coarse-grained materials in the area. Further discussion of specific hydraulic characteristics of the BPOU is provided in Section 5 of this document (EPA, 1994).

The groundwater flow in the BPOU area is generally towards the Whittier Narrows to the southwest. The direction of flow can vary significantly, particularly in the vicinity of the Santa Fe Spreading Grounds during periods of high recharge. Local variations in groundwater flow are also observed in areas near pumping wells and geologic faults.

The most prevalent contaminants in the Baldwin Park area are the VOCs trichloroethene (TCE), tetrachloroethene (PCE), and carbon tetrachloride (CTC). Two broad subareas of groundwater contamination have been identified in the BPOU: in the lower area of the BPOU (generally south of Arrow Avenue), TCE, PCE, CTC, and other VOCs have been detected; in both the upper and lower BPOU area, TCE and PCE have been measured at concentrations up to 200 times drinking water standards.

Other VOCs detected above California and/or federal standards in the BPOU area include: 1,2-dichloroethane (1,2-DCA); 1,1-dichloroethene (1,1-DCE); 1,1-dichloroethane (1,1-DCA); cis-1,2-dichloroethene (cis-1,2-DCE); trans-1,2-dichloroethene (trans-1,2-DCE); 1,1,1-trichloroethane (1,1,1-TCA); and chloroform. In addition, nitrate, an inorganic contaminant, has been detected in groundwater at or near the proposed extraction areas.

## 1.3 Objectives

The program described in the Sampling and Analysis Plan (SAP) addresses data collection and analysis activities required to complete the conceptual remedial design. Data collected during this program were combined with existing data and then used to determine optimal extraction locations and pumping rates to allow for final design. The objectives of the monitoring program during the pre-remedial design stage were as follows:

- Collect sufficient data to determine the location, the depth and the pumping rate of the proposed extraction wells for implementation of the remedial action.
- Ensure that sufficient information is gathered for all parameters necessary to allow for detailed design and construction of the extraction wells.
- Collect sufficient data to allow development, calibration, and use of a 3-dimensional flow and transport model, using the data both to assist in the design process, as well as to evaluate the performance of various pumping scenarios.

The monitoring program included the installation and sampling of multi-port groundwater monitoring wells, the sampling of existing monitoring wells, measurement of groundwater elevations at monitoring and production wells, and the measurement of other aquifer properties to:

- Verify or refine the boundaries of upper and lower areas to help determine final pumping configurations.
- Verify or refine the efficiency of EPA's recommended pumping configurations.
- Verify or revise contaminant influent concentration estimates that will be used in the design of the OU treatment facilities.
- Provide a monitoring network so that changes in the groundwater flow regime or contaminant concentrations that may require modifications in extraction rates, well locations, or treatment methods are identified.
- Evaluate the effectiveness of the proposed remedy in satisfying the remedial objectives of preventing future increases in, and begin to reduce, concentrations of VOCs in groundwater in BPOU. The evaluation included plotting and interpreting temporal trends in water quality, analysis of changes in groundwater flow induced by the extraction wells, and computer simulations of groundwater flow, including the estimation and evaluation of capture zones.

## 1.4 Project Approach

The requirements for this project were initially established by the March 31 Record of Decision. Subsequent to the issuance of the rod, EPA and the BPOUSC agreed the scope of work for the predesign groundwater monitoring program. The agreed upon scope of work was documented in the SAP, and forms the framework for the project approach described herein. There are seven components of the scope of work for the pre-remedial design groundwater monitoring program. Each element and its relationship to the objectives stated in Section 1.3 are summarized in this section.

### Task 1 - Project Planning Documents

The SAP, which included the statement of work, field sampling and analysis plan, quality assurance project plan (QAPP), project organization/communication plan, and health and safety plan (HSP), was completed as the first task of the scope of work for the Phase 1 BPOU activities (June 13, 1995).

### Task 2 - Site Acquisition

The principal objective of this task was to identify accessible areas for installing monitoring wells and to formally acquire written permission from the appropriate land owner for the installation and subsequent sampling of the wells.

### Task 3 - Drilling Contractor Procurement

This task included the preparation of plans and specifications for the monitoring well installation using multi-port (MP) type completions, coupled with other bid document requirements, coordination of preconstruction drilling activities, and assistance to the San Gabriel Basin Water Quality Authority (WQA) in selecting a drilling subcontractor.

### Task 4 - Phase I Well Construction

This task included borehole drilling, well design, construction, and development. Based on the sampling results from the first wells installed, MW5-03 and MW5-05, the ROD-proposed locations for extraction were evaluated for appropriateness, and the number and location of the remaining monitoring wells was determined.

### Task 5 - Aquifer Testing

Three aquifer tests were performed. The aquifer tests provided hydraulic conductivity data that were used to refine the 3-dimensional DYN groundwater model.

### Task 6 - Data Evaluation

The data evaluation task included monitoring and production well sampling, preparation of reports and groundwater modeling. Data from the monitoring wells were used to determine the location, the depths, and the pumping rate of proposed extraction wells for implementation of the remedial action. Monitoring well data were also used to develop, calibrate, and use a 3-dimensional groundwater flow (DYNFLOW) model. Particle tracking and simulated flow velocity vectors were used to select flow rates and determine final extraction well sites.

### Task 7 - Project Management

Project management support was provided to the WQA for the duration of the project, including planning, organizing and directing staff; scheduling work; budget review and financial statement preparation; and coordinating the project with other project participants.

## 1.5 Report Organization

A brief description of the organization and contents of the sections contained in this report is presented in this section:

- Section 2 provides the regulatory requirements which are detailed in the Record of Decision (ROD). The summary of the ROD is presented.
- Section 3 provides a summary of field activities performed during the pre-remedial design investigation and variations from the requirements of the project planning documents.
- Section 4 provides a summary and evaluation of field and analytical data collected during the pre-remedial design investigation.
- Section 5 presents the CDM DYN model and modeling results. The basis for project extraction well siting is detailed, including the locations, depth, and proposed pumping rates of each extraction well.
- Section 6 provides a summary and conclusions.
- Section 7 provides a listing of references cited in the document.
- Appendices. A separate volume of appendices contains well construction details, quarterly groundwater laboratory data sheets, field parameter data sheets, aquifer test data, and data validation reports.

# 2 Section Two

# Draft - Section 2
# Project Requirements

## 2.1 ROD Requirements

On March 31, 1994, EPA signed the Record of Decision (ROD) for the Baldwin Park Operable Unit. The ROD specifies, as the selected remedy, the extraction and treatment of approximately 19,000 gpm as an interim action. This pumpage constitutes Alternative 1, evaluated in the April 1993 OUFS and summarized in the ROD. The ROD also summarizes site risks which lead to EPA's selection of Alternative 1. The conclusions of the preliminary risk assessment, based on the assumption that groundwater is used in an untreated state, were as follows:

- The carcinogenic risk, expressed as excess lifetime cancer risk for reasonable maximum exposure, is $5 \times 10^{-5}$; this value is well below EPA's threshold for acceptable risk.
- The highest non-carcinogenic risk, expressed as the Hazard Index, is 0.8 for TCE, well below the acceptable risk threshold of 1.0.
- In the aquifer, concentrations of several VOC constituents exceed drinking water MCL standards. However, there are no known exceedences of MCLs for groundwater provided by purveyors/suppliers to their customers, owing to well head treatment units installed on numerous production wells.

Given the absence of unacceptable risk, EPA has focused the remedy on containment. Specifically, the selected remedy is intended to:

"...prevent future increases in, and begin to reduce, concentrations of all VOCs in groundwater in the Baldwin Park area....by limiting further migration of contaminated groundwater into clean and less contaminated areas or depths that would benefit most from additional protection and by removing contaminants from the aquifer."

With regard to this objective of containment, the ROD further states "extraction in both the upper and lower areas would significantly reduce contaminant concentrations throughout the Baldwin Park area, although the rate and magnitude of the reduction are difficult to predict." Such potential reductions in rate and magnitude have not been further evaluated since the issuance of the ROD, and are not addressed in this document.

As described in the ROD, in order to achieve containment, "EPA's analyses indicate that approximately 10,500 gpm of groundwater must be extracted more or less continuously in the lower area; approximately 8,500 gpm of groundwater must be extracted in the upper area. These extraction rates would limit contaminant migration out of the upper and lower areas of contamination (i.e., to capture or contain the areas of contamination).

## 2.2 Water Delivery Requirements

As described above, a primary objective of this project is to meet the objectives of the March 1994 CERCLA ROD. Accordingly, the modeling analyses presented in Section 5 of this document focus on identifying the most effective means to achieve such CERCLA objectives. In other words, the modeling focussed exclusively on the pumping component of the CERCLA project - the extraction of groundwater for subsequent treatment. As a result, the modeling analyses do not include an evaluation of the feasibility of the proposed pumping relative to the requirements and constraints of the water supply aspects of this project. As specific but not exclusive, examples:

- The CEQA EIR and supporting documents (CDM 1996) analyzes the impacts of recharging water to replace the 15,000 to 19,000 gpm planned to be pumped and exported from the basin. The modeling analyses in Section 5 herein do not reevaluate the recharge capacity constraints and other impacts associated with more than 19,000 gpm needs to be recharged.

- The ability to utilize 15,000 to 19,000 gpm of exported water is based in part, on the demands of MWD's customers. The modeling analyses in Section 5 herein do not evaluate the feasibility of providing greater than 19,000 gpm during some periods of a given year.

Therefore, the feasibility of the water delivery aspects of the project are critical to the overall success of the project. Although this document does not specifically address such water supply requirements, it is critical that eventual selection of the most effective CERCLA pumpage also be consistent with all such water delivery constraints.

# 3

# Section Three

# Draft - Section 3
# Field Activities Performed

To meet the objectives of the BPOU pre-remedial design groundwater monitoring program, which were detailed in Section 1 of this report, the following field activities were performed: (1) monitoring well installation; (2) groundwater monitoring of newly-installed monitoring wells, existing water supply wells, and existing site assessment wells; and (3) aquifer testing of water supply wells. This section summarizes the details of these field activities. Field activities detailed in this document were completed in general accordance with the Sampling and Analysis Plan (SAP) for the BPOU Pre-Remedial Design Groundwater Monitoring Program (CDM, 1995).

To date, seven well completion reports have been produced that describe field activities associated with the installation of eight Westbay multiport (MP) wells. The following sections summarize the details of the field activities discussed in the well completion reports listed below, as well as additional field activities that were conducted as part of the monitoring program. Submittal dates and field activities that were discussed in each well completion report are outlined below.

- Well Completion Report for Wells MW5-03 and MW5-05, dated March 1996, presents data collected during installation of these two wells and groundwater analytical results from the initial and 30-day sampling events. Also included are analytical results from one supplemental sampling event of well MW5-05.

- Well Completion Report for Well MW5-11, dated September 1996, presents data collected during well installation activities and groundwater analytical results from the initial and 30-day sampling events.

- Well Completion Report for Well MW5-17, dated October 1996, presents data collected during well installation activities and groundwater analytical results from the initial and 30-day sampling events.

- Well Completion Report for Well MW5-13, dated October 1996, presents data collected during well installation activities and groundwater analytical results from the initial and 30-day sampling events.

- Well Completion Report for Well MW5-18, dated November 1996, presents data collected during well installation activities and groundwater analytical results from the initial and 30-day sampling events.

- Well Completion Report for Well MW5-15, dated November 1996, presents data collected during well installation activities and groundwater analytical results from the initial and 30-day sampling events.

- Well Completion Report for Well MW5-08, dated December 1996, presents data collected during well installation activities and groundwater analytical results from the initial and 30-day sampling events.

## 3.1 Pre-Remedial Design Groundwater Investigation

The following sections detail drilling, installation, development and sampling of the newly-installed Westbay MP wells. Also discussed is the collection of well elevation survey data from the MP wells, and monthly water levels from the MP wells, existing water supply and site assessment wells. Aquifer test data from step drawdown and constant discharge pumping tests were collected from four existing water supply wells. Also discussed is the collection of water quality samples from the MP wells, active and inactive water supply wells, and site assessment wells. Analytical results and field measurement data are tabulated and discussed in Section 4 of this document.

Beylik Drilling, Inc., of La Habra, California was subcontracted by WQA to drill and install the MP wells. Beylik also provided the equipment necessary to sample several of the inactive water supply wells.

### *3.1.1 Multiport Well Drilling, Installation, Development and Sampling*

Eight MP monitoring wells were installed during the BPOU pre-remedial design groundwater monitoring program (i.e., MW5-3, MW5-5, MW5-8, MW5-11, MW5-13, MW5-15, MW5-17 and MW5-18). The Westbay MP monitoring well is a multipoint monitoring and sampling well system which includes several discrete sampling ports in one monitoring well. The total number of sampling ports installed per MP well ranged from three to ten. The first digit of the well identification number indicates that the well is located within RI Study Area 5 (i.e., MW5-). The number following the hyphen indicates the individual multiport well location number. Sampling ports within each MP well were numbered sequentially, from the deepest (e.g., MW5-03 [Zone 1]) to the shallowest (e.g., MW5-03 [Zone 10]) port.

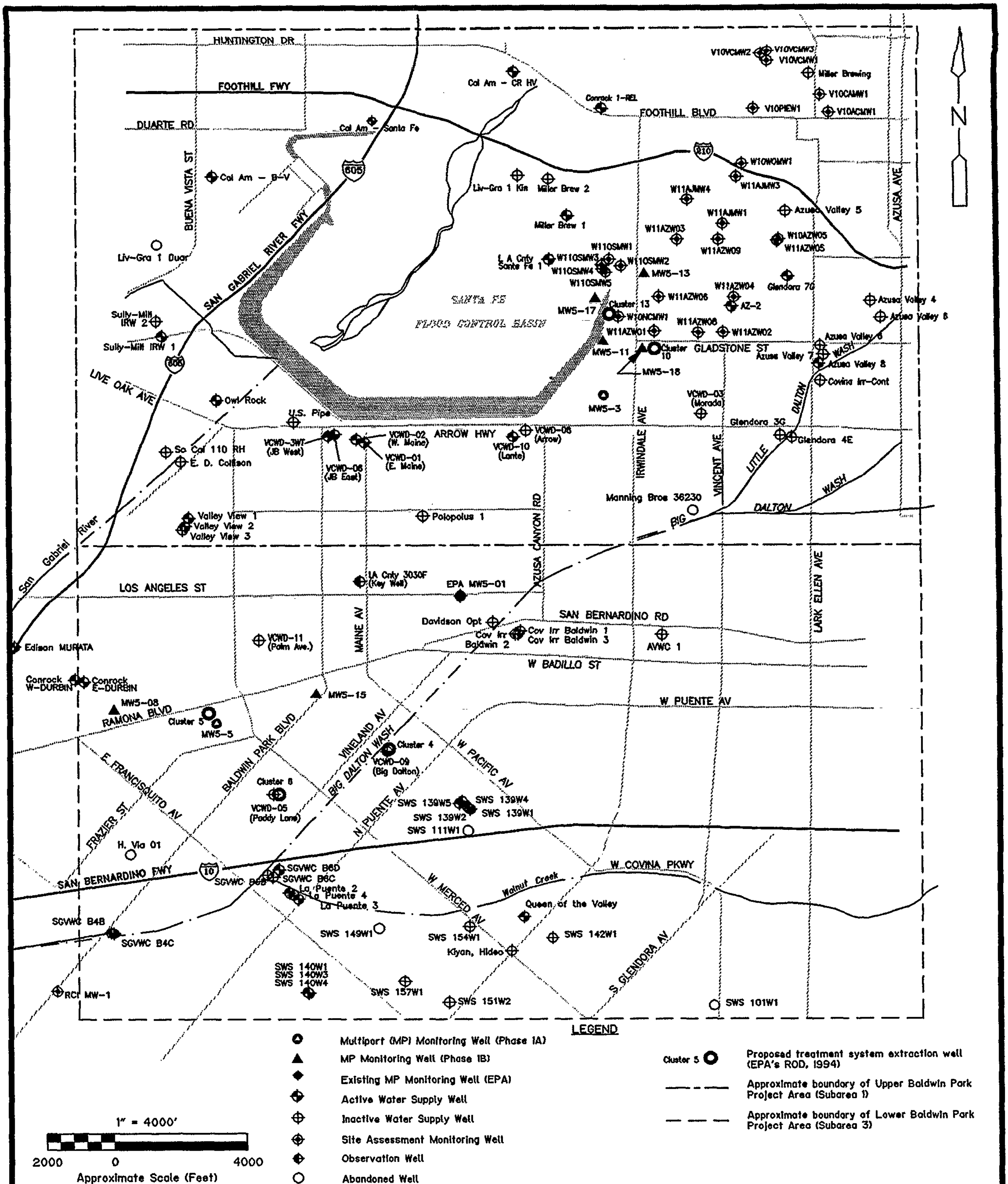
Table 3-1 provides a listing of the monitoring wells and includes a summary of the purpose of each monitoring well. A map showing the locations of the MP wells, as well as existing wells in the BPOU area, has been included as Figure 3-1. Well locations are also illustrated on Plate 1, which is located at the end of this document.

Generally, the new multiport wells are located in areas with little or no existing water quality information at the approximate locations proposed in the SAP. The proposed locations specified in the SAP were provided by EPA during development of the SAP. The actual locations varied slightly from EPA's proposed locations due to access constraints and land availability. The locations were approved by EPA prior to initiating drilling activities at each well location.

**Table 3-1**
**Monitoring Well Rationale**

| Phase | Subarea | Well Number[1] | Monitoring Well Rationale[2] |
|---|---|---|---|
| 1A | 1 | MW5-03 | Monitoring across the entire aquifer down gradient of Subarea 1 to fill a data gap for remedial design and tomonitor remedial effectiveness. |
| 1A | 3 | MW5-05 | Monitoring at cluster 5 to provide contaminant data for remedial design prior to installation of the extraction well. |
| 1B | 1 | MW5-11 | Monitoring at cluster 13 to provide contaminant data for remedial design prior to installation of the extraction well. |
| 1B | 1 | MW5-13 | Fill data gap for remedial design and provide up gradient monitoring for clusters 10 and 13 during implementation. |
| 1B | 1 | MW5-17 | Provide additional data on the lateral and vertical extent of contamination away from facilities in Subarea 1. |
| 1B | 1 | MW5-18 | Monitoring at cluster 10 to provide deeper contaminant data for remedial design prior to installation of the extraction wells. |
| 1B | 3 | MW5-08 | Fill data gap for remedial design and provide up gradient monitoring for cluster 5 during implementation. |
| 1B | 3 | MW5-15 | Fill data gap for remedial design and provide up gradient monitoring for cluster 6 during implementation. |

*Notes:*
[1] Only wells installed for this sampling program are listed.
[2] Based on EPA's Record of Decision (ROD), March 1994.

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# WELL LOCATION MAP

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Figure 3-1

Well construction was conducted in two phases: Phase 1A and Phase 1B. During Phase 1A, monitoring wells MW5-03 (located in Subarea 1) and MW5-05 (located in Subarea 3) were drilled, constructed and sampled in order to determine if the ROD-proposed locations for extraction wells and thus the monitoring well locations were appropriate. Phase 1B consisted of the installation and sampling of the remaining monitoring wells.

Drilling began at well location MW5-3 on June 15, 1995, and concluded at well location MW5-8 on May 24, 1996. In order to expedite the field program, mud rotary drilling activities were generally conducted 24 hours per day, seven days per week. However, MW5-08 and MW5-15, located in the city of Baldwin Park, were drilled during daylight only. The wells were completed to depths ranging from 587 feet below ground surface (bgs) at MW5-05 to 1185 feet bgs at MW5-03. A summary of well construction details is provided in Table 3-2 and Appendix A. The following sections summarize field activities associated with drilling, installation, development, sampling and testing of the MP wells. A more detailed description of the field activities for each well is provided in the well completion reports listed previously.

#### *3.1.1.1 Borehole Drilling*

Conductor Casing Installation

Prior to drilling, 14-inch diameter conductor casings (5/16-inch-thick mild steel) were set at each site to depths ranging from 40 to 60 feet bgs. The borehole for the conductor casing was advanced using a bucket auger rig equipped with 30-inch-diameter flight augers, as well as 30-inch-diameter core barrels. The annular space between the borehole wall and the casing was grouted through a temporary tremie pipe with a 10-sack sand-cement slurry to form the sanitary seal for the well, as required by the State of California.

Drilling

During Phase 1A, 10-inch-diameter pilot boreholes were drilled initially, followed by reaming the boreholes to 12.25 inch-diameter. The remaining wells (Phase 1B) were drilled to 12.25-inch-diameter in one pass. Direct mud rotary techniques were employed to drill the multiport monitoring well borings. The boreholes were advanced using a Portadrill TKT mud rotary drill rig. The rig has a total derrick height of approximately 67 feet and uses 4 ½-inch A.P.I. Full Hole drill pipe (i.e., drill pipe with a 4-7/8-inch outside diameter and 3-inch inside diameter).

Throughout drilling operations, CDM and Beylik personnel monitored drilling fluid parameters including sand content, mud weight, and fluid viscosity. Drilling fluid consisted of only pure bentonite (Wyo-Ben Naturalgel) mixed with potable water. The drilling fluid was contained in a portable mud tank (capacity of approximately 2,500 gallons) and recirculated. No additives or synthetic polymers were used. Potable water was provided by nearby fire hydrants. The drilling contractor obtained a water meter from the appropriate agency and connected it to the fire hydrant prior to utilizing the water supply.

# Table 3-2
## Baldwin Park Operable Unit
### Summary of Multiport Well Construction Details

| EPA Well No. | | Date | | Casing (4-inch inner diameter)* | | | | Annular Material | | Multiport Casing | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Zone No. | Start | End | Depth (feet bgs) | Type | Slot Size (inches) | Material | Depth (feet bgs) | Type | Depth (feet bgs) | Type |
| MW5-03 | | 15-Jun-95 | 3-Aug-95 | 0 - 60 | Conductor* | | Mild Steel | 0 - 178 | Cement/Grout Seal | | |
| | | | | 0 - 215 | Blank | | Mild Steel | 178 - 219 | Benseal/8 x 16 Sand Seal | | |
| | | | | 215 - 235 | Blank | | Stainless Steel | 219 - 221 | Transition Sand | 221 | Measurement Port (SQ10) |
| | MW50310 | | | 235 - 245 | Slotted Screen | 0.040 | Stainless Steel | 221 - 254 | 8 Mesh Sand (8 x 16) | 236.6 | Sampling Port |
| | | | | 245 - 265 | Blank | | Stainless Steel | 254 - 257 | Transition Sand | 247 | Pumping Port |
| | | | | 265 - 280 | Blank | | Mild Steel | 257 - 280 | Benseal/8 x 16 Sand Seal | 252 | Measurement Port (LQ9) |
| | | | | 280 - 300 | Blank | | Stainless Steel | 280 - 284 | Transition Sand | 287 | Measurement Port (SQ9) |
| | MW50309 | | | 300 - 310 | Slotted Screen | 0.040 | Stainless Steel | 284 - 322 | 8 Mesh Sand (8 x 16) | 301.6 | Sampling Port |
| | | | | 310 - 330 | Blank | | Stainless Steel | 322 - 325 | Transition Sand | 312 | Pumping Port |
| | | | | 330 - 380 | Blank | | Mild Steel | 325 - 386 | Benseal/8 x 16 Sand Seal | 317 | Measurement Port (LQ8) |
| | | | | 380 - 400 | Blank | | Stainless Steel | 386 - 388 | Transition Sand | 387 | Measurement Port (SQ8) |
| | MW50308 | | | 400 - 410 | Slotted Screen | 0.040 | Stainless Steel | 388 - 426 | No.3 Sand (8 x 20) | 401.6 | Sampling Port |
| | | | | 410 - 430 | Blank | | Stainless Steel | 426 - 429 | Transition Sand | 412 | Pumping Port |
| | | | | 430 - 490 | Blank | | Mild Steel | 429 - 497 | Benseal/8 x 20 Sand Seal | 417 | Measurement Port (LQ7) |
| | | | | 490 - 510 | Blank | | Stainless Steel | 497 - 500 | Transition Sand | 497 | Measurement Port (SQ7) |
| | MW50307 | | | 510 - 520 | Wire wrap Screen | 0.020 | Stainless Steel | 500 - 538 | No.3 Sand (8 x 20) | 511.6 | Sampling Port |
| | | | | 520 - 540 | Blank | | Stainless Steel | 538 - 541 | Transition Sand | 522 | Pumping Port |
| | | | | 540 - 570 | Blank | | Mild Steel | 541 - 580 | Benseal/8 x 20 Sand Seal | 527 | Measurement Port (LQ6) |
| | | | | 570 - 590 | Blank | | Stainless Steel | 580 - 583 | Transition Sand | 577 | Measurement Port (SQ6) |
| | MW50306 | | | 590 - 600 | Wire wrap Screen | 0.020 | Stainless Steel | 583 - 615 | No.3 Sand (8 x 20) | 591.6 | Sampling Port |
| | | | | 600 - 620 | Blank | | Stainless Steel | 615 - 618 | Transition Sand | 602 | Pumping Port |
| | | | | 620 - 650 | Blank | | Mild Steel | 618 - 656 | Benseal/8 x 20 Sand Seal | 607 | Measurement Port (LQ5) |
| | | | | 650 - 670 | Blank | | Stainless Steel | 656 - 660 | Transition Sand | 657 | Measurement Port (SQ5) |
| | MW50305 | | | 670 - 680 | Wire wrap Screen | 0.020 | Stainless Steel | 660 - 693 | No.3 Sand (8 x 20) | 671.6 | Sampling Port |
| | | | | 680 - 700 | Blank | | Stainless Steel | 693 - 696 | Transition Sand | 682 | Pumping Port |
| | | | | 700 - 790 | Blank | | Mild Steel | 696 - 799 | Benseal/8 x 20 Sand Seal | 687 | Measurement Port (LQ4) |
| | | | | 790 - 810 | Blank | | Stainless Steel | 799 - 802 | Transition Sand | 797 | Measurement Port (SQ4) |
| | MW50304 | | | 810 - 820 | Wire wrap Screen | 0.020 | Stainless Steel | 802 - 842 | No.3 Sand (8 x 20) | 811.6 | Sampling Port |
| | | | | 820 - 840 | Blank | | Stainless Steel | 842 - 844 | Transition Sand | 822 | Pumping Port |
| | | | | 840 - 900 | Blank | | Mild Steel | 844 - 907 | Benseal/8 x 20 Sand Seal | 827 | Measurement Port (LQ3) |
| | | | | 900 - 920 | Blank | | Stainless Steel | 907 - 911 | Transition Sand | 907 | Measurement Port (SQ3) |
| | MW50303 | | | 920 - 930 | Wire wrap Screen | 0.020 | Stainless Steel | 911 - 948 | No.3 Sand (8 x 20) | 921.6 | Sampling Port |
| | | | | 930 - 950 | Blank | | Stainless Steel | 948 - 950 | Transition Sand | 932 | Pumping Port |
| | | | | 950 - 995 | Blank | | Mild Steel | 950 - 1003 | Benseal/8 x 20 Sand Seal | 937 | Measurement Port (LQ2) |
| | | | | 995 - 1015 | Blank | | Stainless Steel | 1003 - 1006 | Transition Sand | 1002 | Measurement Port (SQ2) |
| | MW50302 | | | 1015 - 1025 | Wire wrap Screen | 0.020 | Stainless Steel | 1006 - 1041 | No.3 Sand (8 x 20) | 1016.6 | Sampling Port |
| | | | | 1025 - 1045 | Blank | | Stainless Steel | 1041 - 1045 | Transition Sand | 1027 | Pumping Port |
| | | | | 1045 - 1130 | Blank | | Mild Steel | 1045 - 1136 | Benseal/8 x 20 Sand Seal | 1032 | Measurement Port (LQ1) |
| | | | | 1130 - 1150 | Blank | | Stainless Steel | 1136 - 1141 | Transition Sand | 1137 | Measurement Port (SQ1) |
| | MW50301 | | | 1150 - 1160 | Wire wrap Screen | 0.020 | Stainless Steel | 1141 - 1200 | No.3 Sand (8 x 20) | 1151.6 | Sampling Port |
| | | | | 1160 - 1180 | Blank | | Stainless Steel | | | 1162 | Pumping Port |
| | | | | 1180 - 1185 | End cap | | Mild Steel | | | 1177 | End Cap |

Notes: * Conductor Casing is 14-inch OD

Table 3-2
Baldwin Park Operable Unit
Summary of Multiport Well Construction Details

| EPA Well No. | | Date | | Casing (4-inch inner diameter)* | | | | Annular Material | | Multiport Casing | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Zone No. | Start | End | Depth (feet bgs) | Type | Slot Size (inches) | Material | Depth (feet bgs) | Type | Depth (feet bgs) | Type |
| MW5-05 | | 18-Jul-95 | 15-Aug-95 | 0 - 39.5 | Conductor* | | Mild Steel | 0 - 165 | Cement/Grout Seal | | |
| | | | | 0 - 198 | Blank | | Mild Steel | 165 - 203 | Benseal/8 x 20 Sand Seal | | |
| | | | | 198 - 218 | Blank | | Stainless Steel | 203 - 206 | Transition Sand | 205 | Measurement Port |
| | MW50504 | | | 218 - 228 | Wire wrap Screen | 0.020 | Stainless Steel | 206 - 240 | No.3 Sand (8 x 20) | 220 | Sampling Port |
| | | | | 228 - 248 | Blank | | Stainless Steel | 240 - 242 | Transition Sand | 230 | Pumping Port |
| | | | | 248 - 360 | Blank | | Mild Steel | 242 - 367 | Benseal/8 x 20 Sand Seal | 235 | Measurement Port |
| | | | | 360 - 380 | Blank | | Stainless Steel | 367 - 370 | Transition Sand | 367 | Measurement Port |
| | MW50503 | | | 380 - 390 | Wire wrap Screen | 0.020 | Stainless Steel | 370 - 400 | No.3 Sand (8 x 20) | 3823 | Sampling Port |
| | | | | 390 - 410 | Blank | | Stainless Steel | 400 - 402 | Transition Sand | 392 | Pumping Port |
| | | | | 410 - 444 | Blank | | Mild Steel | 402 - 451 | Benseal/8 x 20 Sand Seal | 397 | Measurement Port |
| | | | | 444 - 464 | Blank | | Stainless Steel | 451 - 455 | Transition Sand | 451 | Measurement Port |
| | MW50502 | | | 464 - 474 | Wire wrap Screen | 0.020 | Stainless Steel | 455 - 485 | No.3 Sand (8 x 20) | 4663 | Sampling Port |
| | | | | 474 - 494 | Blank | | Stainless Steel | 485 - 487 | Transition Sand | 476 | Pumping Port |
| | | | | 494 - 532 | Blank | | Mild Steel | 487 - 529 | Benseal/8 x 20 Sand Seal | 481 | Measurement Port |
| | | | | 532 - 552 | Blank | | Stainless Steel | 529 - 539 | Transition Sand | 539 | Measurement Port |
| | MW50501 | | | 552 - 562 | Wire wrap Screen | 0.020 | Stainless Steel | 539 - 609 | No.3 Sand (8 x 20) | 5543 | Sampling Port |
| | | | | 562 - 582 | Blank | | Stainless Steel | | | 564 | Pumping Port |
| | | | | 582 - 587 | End cap | | Mild Steel | | | 574 | End Cap |
| MW5-08 | | 1-Jul-96 | 30-Jul-96 | 0 - 40 | Conductor* | | Mild Steel | 0 - 311 | Cement/Grout Seal | | |
| | | | | 0 - 360 | Blank | | Mild Steel | 311 - 368 | Benseal/8 x 20 Sand Seal | | |
| | | | | 360 - 380 | Blank | | Stainless Steel | 368 - 371 | Transition Sand | 368 | Measurement Port |
| | MW50804 | | | 380 - 390 | Wire wrap Screen | 0.020 | Stainless Steel | 371 - 401 | No.3 Sand (8 x 20) | 383 | Sampling Port |
| | | | | 390 - 410 | Blank | | Stainless Steel | 401 - 405 | Transition Sand | 393 | Pumping Port |
| | | | | 410 - 534 | Blank | | Mild Steel | 405 - 540 | Benseal/8 x 20 Sand Seal | 398 | Measurement Port |
| | | | | 534 - 554 | Blank | | Stainless Steel | 540 - 543 | Transition Sand | 542 | Measurement Port |
| | MW50803 | | | 554 - 564 | Wire wrap Screen | 0.020 | Stainless Steel | 543 - 573 | No.3 Sand (8 x 20) | 557 | Sampling Port |
| | | | | 564 - 584 | Blank | | Stainless Steel | 573 - 575 | Transition Sand | 567 | Pumping Port |
| | | | | 584 - 650 | Blank | | Mild Steel | 575 - 654 | Benseal/8 x 20 Sand Seal | 572 | Measurement Port |
| | | | | 650 - 670 | Blank | | Stainless Steel | 654 - 659 | Transition Sand | 658 | Measurement Port |
| | MW50802 | | | 670 - 680 | Wire wrap Screen | 0.020 | Stainless Steel | 659 - 693 | No.3 Sand (8 x 20) | 673 | Sampling Port |
| | | | | 680 - 700 | Blank | | Stainless Steel | 693 - 695 | Transition Sand | 683 | Pumping Port |
| | | | | 700 - 775 | Blank | | Mild Steel | 695 - 782 | Benseal/8 x 20 Sand Seal | 688 | Measurement Port |
| | | | | 775 - 795 | Blank | | Stainless Steel | 782 - 785 | Transition Sand | 783 | Measurement Port |
| | MW50801 | | | 795 - 805 | Wire wrap Screen | 0.020 | Stainless Steel | 785 - 850 | No.3 Sand (8 x 20) | 798 | Sampling Port |
| | | | | 805 - 825 | Blank | | Stainless Steel | | | 808 | Pumping Port |
| | | | | 825 - 830 | End cap | | Mild Steel | | | 828 | Bottom of End Cap |

Notes: * Conductor Casing is 14-inch OD

**Table 3-2**
**Baldwin Park Operable Unit**
**Summary of Multiport Well Construction Details**

| EPA Well No. | Zone No. | Date Start | Date End | Casing (4-inch inner diameter)* Depth (feet bgs) | Type | Slot Size (inches) | Material | Annular Material Depth (feet bgs) | Type | Multiport Casing Depth (feet bgs) | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MW5-11 | | 31-Aug-95 | 6-Oct-95 | 0 - 59 | Conductor* | | Mild Steel | 0 - 256 | Cement/Grout Seal | | |
| | | | | 0 - 290 | Blank | | Mild Steel | 256 - 296 | Benseal/8 x 20 Sand Seal | | |
| | | | | 290 - 310 | Blank | | Stainless Steel | 296 - 297 | Transition Sand | 298 | Measurement Port |
| | MW51103 | | | 310 - 320 | Wire wrap Screen | 0.020 | Stainless Steel | 297 - 331 | No. 3 Sand (8 x 20) | 313 | Sampling Port |
| | | | | 320 -340 | Blank | | Stainless Steel | 331 - 333 | Transition Sand | 323 | Pumping Port |
| | | | | 340 - 510 | Blank | | Mild Steel | 333 - 517 | Benseal/8 x 20 Sand Seal | 328 | Measurement Port |
| | | | | 510 - 530 | Blank | | Stainless Steel | 517 - 518 | Transition Sand | 518 | Measurement Port |
| | MW51102 | | | 530 - 540 | Wire wrap Screen | 0.020 | Stainless Steel | 518 - 548 | No. 3 Sand (8 x 20) | 533 | Sampling Port |
| | | | | 540 - 560 | Blank | | Stainless Steel | 548 - 550 | Transition Sand | 543 | Pumping Port |
| | | | | 560 - 670 | Blank | | Mild Steel | 550 - 678 | Benseal/8 x 20 Sand Seal | 548 | Measurement Port |
| | | | | 670 - 690 | Blank | | Stainless Steel | 678 - 681 | Transition Sand | 678 | Measurement Port |
| | MW51101 | | | 690 - 700 | Wire wrap Screen | 0.010 | Stainless Steel | 681 - 740 | No.2/16 Sand (16 x 30) | 693 | Sampling Port |
| | | | | 700 - 720 | Blank | | Stainless Steel | | | 703 | Pumping Port |
| | | | | 720 - 725 | End Cap | | Mild Steel | | | 720 | End Cap |
| MW5-13 | | 7-Dec-95 | 6-Jan-96 | 0 - 40 | Conductor* | | Mild Steel | 0 - 288 | Cement/Grout Seal | | |
| | | | | 0 - 320 | Blank | | Mild Steel | 288 - 327 | Benseal/8 x 20 Sand Seal | | |
| | | | | 320 - 340 | Blank | | Stainless Steel | 327 - 329 | Transition Sand | 327 | Measurement Port |
| | MW51303 | | | 340 - 350 | Wire wrap Screen | 0.020 | Stainless Steel | 329 - 361 | No.3 Sand (8 x 20) | 342 | Sampling Port |
| | | | | 350 - 370 | Blank | | Stainless Steel | 361 - 364 | Transition Sand | 352 | Pumping Port |
| | | | | 370 - 500 | Blank | | Mild Steel | 364 - 507 | Benseal/8 x 20 Sand Seal | 357 | Measurement Port |
| | | | | 500 - 520 | Blank | | Stainless Steel | 507 - 509 | Transition Sand | 507 | Measurement Port |
| | MW51302 | | | 520 - 530 | Wire wrap Screen | 0.020 | Stainless Steel | 509 - 539 | No.3 Sand (8 x 20) | 522 | Sampling Port |
| | | | | 530 - 550 | Blank | | Stainless Steel | 539 - 542 | Transition Sand | 532 | Pumping Port |
| | | | | 550 - 664 | Blank | | Mild Steel | 542- 668 | Benseal/8 x 20 Sand Seal | 537 | Measurement Port |
| | | | | 664 - 684 | Blank | | Stainless Steel | 668 - 670 | Transition Sand | 671 | Measurement Port |
| | MW51301 | | | 684 - 694 | Wire wrap Screen | 0.020 | Stainless Steel | 670 - 729 | No.3 Sand (8 x 20) | 686 | Sampling Port |
| | | | | 694 - 714 | Blank | | Stainless Steel | | | 696 | Pumping Port |
| | | | | 714 - 719 | End Cap | | Mild Steel | | | 718 | End Cap |
| MW5-15 | | 30-May-96 | 25-Jun-96 | 0 - 40 | Conductor* | | Mild Steel | 0 - 167 | Cement/Grout Seal | | |
| | | | | 0 - 215 | Blank | | Mild Steel | 167 - 222 | Benseal/8 x 20 Sand Seal | | |
| | | | | 215 - 225 | Blank | | Stainless Steel | 222 - 224 | Transition Sand | 223 | Measurement Port |
| | MW51503 | | | 235 - 245 | Wire Wrap Screen | 0.020 | Stainless Steel | 224 - 255 | No. 3 Sand (8 x 20) | 238 | Sampling Port |
| | | | | 245 - 265 | Blank | | Stainless Steel | 255 - 259 | Transition Sand | 248 | Pumping Port |
| | | | | 265 - 430 | Blank | | Mild Steel | 259 - 437 | Benseal/8 x 20 Sand Seal | 253 | Measurement Port |
| | | | | 430 - 450 | Blank | | Stainless Steel | 437 - 441 | Transition Sand | 438 | Measurement Port |
| | MW51502 | | | 450 - 460 | Wire Wrap Screen | 0.020 | Stainless Steel | 441 - 470 | No. 3 Sand (8 x 20) | 453 | Sampling Port |
| | | | | 460 - 480 | Blank | | Stainless Steel | 470 - 474 | Transition Sand | 463 | Pumping Port |
| | | | | 480 - 650 | Blank | | Mild Steel | 474 - 657 | Benseal/8 x 20 Sand Seal | 468 | Measurement Port |
| | | | | 650 - 670 | Blank | | Stainless Steel | 657 - 661 | Transition Sand | 658 | Measurement Port |
| | MW51501 | | | 670 - 680 | Wire Wrap Screen | 0.020 | Stainless Steel | 661 - 725 | No. 3 Sand (8 x 20) | 673 | Sampling Port |
| | | | | 680 - 700 | Blank | | Stainless Steel | | | 683 | Pumping Port |
| | | | | 700 - 705 | End Cap | | Mild Steel | | | 694 | Bottom of End Cap |

Notes: * Conductor Casing is 14-inch OD

**Table 3-2**
**Baldwin Park Operable Unit**
**Summary of Multiport Well Construction Details**

| EPA Well No. | Zone No. | Date Start | Date End | Casing (4-inch inner diameter)* Depth (feet bgs) | Casing Type | Casing Slot Size (inches) | Casing Material | Annular Material Depth (feet bgs) | Annular Material Type | Multiport Casing Depth (feet bgs) | Multiport Casing Type |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MW5-17 | | 2-Oct-95 | 25-Oct-95 | 0 - 60 | Conductor* | | Mild Steel | 0 - 250 | Cement/Grout Seal | | |
| | | | | 0 - 285 | Blank | | Mild Steel | 250 - 290 | Benseal/8 x 20 Sand Seal | | |
| | | | | 285 - 305 | Blank | | Stainless Steel | 290 - 293 | Transition Sand | 292 | Measurement Port |
| | MW51703 | | | 305 - 315 | Wire wrap Screen | 0.020 | Stainless Steel | 293 - 325 | No.3 Sand (8 x 20) | 307 | Sampling Port |
| | | | | 315 - 335 | Blank | | Stainless Steel | 325 - 327 | Transition Sand | 317 | Pumping Port |
| | | | | 335 -520 | Blank | | Mild Steel | 327 - 530 | Benseal/8 x 20 Sand Seal | 322 | Measurement Port |
| | | | | 520 - 540 | Blank | | Stainless Steel | 530 - 533 | Transition Sand | 527 | Measurement Port |
| | MW51702 | | | 540 - 550 | Wire wrap Screen | 0.020 | Stainless Steel | 533 - 563 | No.3 Sand (8 x 20) | 542 | Sampling Port |
| | | | | 550 - 570 | Blank | | Stainless Steel | 563 - 565 | Transition Sand | 552 | Pumping Port |
| | | | | 570 - 678 | Blank | | Mild Steel | 565 - 685 | Benseal/8 x 20 Sand Seal | 557 | Measurement Port |
| | | | | 678 - 698 | Blank | | Stainless Steel | 685 - 688 | Transition Sand | 685 | Measurement Port |
| | MW51701 | | | 698 - 708 | Wire wrap Screen | 0.020 | Stainless Steel | 688 - 746 | No.3 Sand (8 x 20) | 700 | Sampling Port |
| | | | | 708 - 728 | Blank | | Stainless Steel | | | 710 | Pumping Port |
| | | | | 728 - 733 | End Cap | | Mild Steel | | | 727 | End Cap |
| MW5-18 | | 29-Apr-96 | 24-May-96 | 0 - 40 | Conductor* | | Mild Steel | 0 - 430 | Cement/Grout Seal | | |
| | | | | 0 - 480 | Blank | | Mild Steel | 430 - 489 | Benseal/8 x 20 Sand Seal | | |
| | | | | 480 - 500 | Blank | | Stainless Steel | 489 - 490 | Transition Sand | 487 | Measurement Port |
| | MW51803 | | | 500 - 510 | Wire Wrap Screen | 0.020 | Stainless Steel | 490 - 519 | No. 3 Sand (8 x 20) | 502 | Sampling Port |
| | | | | 510 - 530 | Blank | | Stainless Steel | 519 - 520 | Transition Sand | 512 | Pumping Port |
| | | | | 530 - 610 | Blank | | Mild Steel | 520 - 617 | Benseal/8 x 20 Sand Seal | 517 | Measurement Port |
| | | | | 610 - 630 | Blank | | Stainless Steel | 617 - 618 | Transition Sand | 617 | Measurement Port |
| | MW51802 | | | 630 - 640 | Wire Wrap Screen | 0.020 | Stainless Steel | 618 - 649 | No. 3 Sand (8 x 20) | 632 | Sampling Port |
| | | | | 640 - 660 | Blank | | Stainless Steel | 649 - 652 | Transition Sand | 642 | Pumping Port |
| | | | | 660 - 760 | Blank | | Mild Steel | 652 - 763 | Benseal/8 x 20 Sand Seal | 647 | Measurement Port |
| | | | | 760 - 780 | Blank | | Stainless Steel | 763 - 765 | Transition Sand | 767 | Measurement Port |
| | MW51801 | | | 780 - 790 | Wire Wrap Screen | 0.020 | Stainless Steel | 765 - 825 | No. 3 Sand (8 x 20) | 782 | Sampling Port |
| | | | | 790 - 810 | Blank | | Stainless Steel | | | 792 | Pumping Port |
| | | | | 810 - 815 | End Cap | | Mild Steel | | | 802 | Bottom of End Cap |

Notes: * Conductor Casing is 14-inch OD

Prior to mobilization to the well site, the drill rig, shaker table, portable mud tank, drill pipe and bits were decontaminated at the drilling contractor's yard in La Habra. Decontamination activities were periodically observed by CDM personnel at the contractor's supply yard.

Soil Sampling During Drilling

During drilling of each borehole, an on-site CDM representative collected soil cutting grab samples for lithologic description. The grab samples were collected at approximate 10-foot intervals, or at significant changes in borehole lithology, and transferred to resealable plastic bags and clear plastic tackle boxes. Each sample was visually observed and described. Sample descriptions and rig behavior (i.e., variations in drilling rates due to lithology) were used to classify the formation materials using the Unified Soil Classification System (USCS). During drilling activities, color, depth interval, sample descriptions, and other pertinent information regarding the cutting samples were recorded on the field boring log forms. The information contained in the field boring logs was manually input into a commercially available computer program (GINT) and used to generate the lithologic logs contained in the well completion reports (CDM, 1996). A summary of the lithology for each boring is provided in Appendix A.

Geophysical Logging

Down-hole geophysical logging for each borehole was performed by Welenco of Claremont, California. The geophysical logs included spontaneous potential, 16- and 64-inch normal resistivity, point resistivity, gamma ray, and guard resistivity. Geophysical logs are provided in Appendix A. Data collected from the geophysical and lithologic logging were evaluated and used to identify potential screened intervals for the monitoring wells.

Caliper Logging

After geophysical logging was complete, a caliper log was conducted by Welenco to verify the diameter of the boring prior to casing installation. In addition, the caliper log was used to identify areas of washouts which would require additional gravel pack or grout and to calculate the amount of annular fill material needed.

#### *3.1.1.2 Well Design and Construction*

Proposed screened intervals for each well were identified in the field immediately after the geophysical logs were completed by representatives from CDM, WQA, CH2M Hill (EPA's contractor), and Harding Lawson & Associates (representing the Baldwin Park Operable Unit Steering Committee) based on interpretation of the lithologic and geophysical logs. The proposed well design was prepared by CDM and then transmitted to EPA, along with lithologic and geophysical data, for approval prior to installation. Upon approval of the proposed well design, a wiper pass was performed with the 12.25-inch diameter drill bit down the entire depth of the borehole to assure that the borehole was the correct diameter. Following the wiper pass, final well construction began. A summary of well construction details for each well is provided in Table 3-2 and Appendix A.

All casing and screen materials were decontaminated by the drilling contractor and inspected for compliance with the technical specifications by the on-site geologist prior to installation. The slot size of each piece of screen was verified by the on-site geologist by using gauges with specified thicknesses.

Prior to installation of the casing for the well, the borehole fluid was thinned to assist in the installation of the annular materials.

All well casing components had the same inner diameter (4 inches) and wall thickness (0.237 inches) and were manufactured with collars at the top of each section. The wells were installed by welding each section of casing. Collars were used to ensure that the inside of the well was free of uneven surfaces, which could potentially damage the MP well system. Sets of three centralizers, spaced 120 degrees apart, were placed at approximately 60-foot intervals along the outside of the mild steel blank casing, to ensure that the casing was centered in the borehole.

Following installation of the well casing, fill materials were installed in the annular space between the casing and the borehole wall using a temporary tremie pipe. Annular fill materials consisted of Lonestar No. 3 sand (8 x 20 gradation), fine-grained silica sand (transition sand) and granular bentonite. In general, gravel pack materials were placed from approximately 10 feet below the bottom of the screen to approximately 10 feet above the top of the screen. A 2- to 3-foot-thick transition sand was placed directly above and below the gravel pack material to separate it from the bentonite/sand annular seal. Annular seal materials consisting of a 1:1 mixture of Lonestar No. 3 sand and granular bentonite were pumped through a construction tremie pipe between each layer of transition sand. A neat cement grout seal (21 sack neat cement with 4 percent bentonite) was pumped through a tremie pipe into the remaining annulus of each borehole.

Video Survey

Prior to installation of the MP system, a video survey was performed in each well. The video surveys were performed by Welenco to confirm screen intervals and also to detect any defects in well construction. No defects were observed in the wells and the depths of the screened intervals were as previously recorded.

### *3.1.1.3 Well Development*

After construction, development of the wells was completed in three phases: (1) initial development using the drill rig to flush out heavy drilling fluids; (2) development using a Smeal rig (truck-mounted) for repeated episodes of swabbing, airlifting, and bailing to remove fine sediments from the gravel pack and formation and to provide for gravel pack consolidation; and (3) final development of each zone using a straddle packer and submersible pump assembly. All equipment used during development was decontaminated prior to installation into the wells.

An alignment test was performed on the wells during development by lowering the straddle packer and submersible pump assembly down the entire length of the well. The submersible pump, excluding the cable, was 3-3/4 inches in diameter.

Initial development with the drill rig began approximately 24 hours after grouting was complete. Each well was flushed with approximately 1,000 gallons of fresh hydrant water to clean the well of heavy drilling fluids. Flushing was performed by pumping hydrant water through a temporary tremie pipe, located 4 to 6 feet from the bottom of the casing. After flushing the well, a single swab or surge block was used to force fine-grained sediment out of the filter pack and break up and remove any material deposited on the wall of the borehole during drilling. A double swab tool was used, with airlifting, for approximately one hour to develop each perforated zone. Development progressed from the top screen down. A stainless steel bailer was used to remove accumulated sediments from the bottom of the well.

Once swabbing and bailing were complete, inflatable packers were used to isolate each zone during pump development. During pump development, the packer assembly was lowered so that one packer was located below and the second packer above the zone of interest. With packers inflated, a submersible pump located between the packers was utilized to remove formation water from each zone. The pump was periodically turned off to allow the column of water to rush down and out of the formation (surging). Pumping and surging continued until the zone was considered clean as noted by the on-site hydrogeologist. Development continued until discharged water was relatively clear (i.e., turbidity at approximately 5 nephelometric turbidity units [NTUs]) and sediment free. The development water was also monitored for temperature, electrical conductivity (EC), and pH. During the final stages of development, each zone was pumped continuously until the field parameters had stabilized to within approximately 10 percent of previous measurements. The amount of water added and removed during development for each well is shown on Table 3-3.

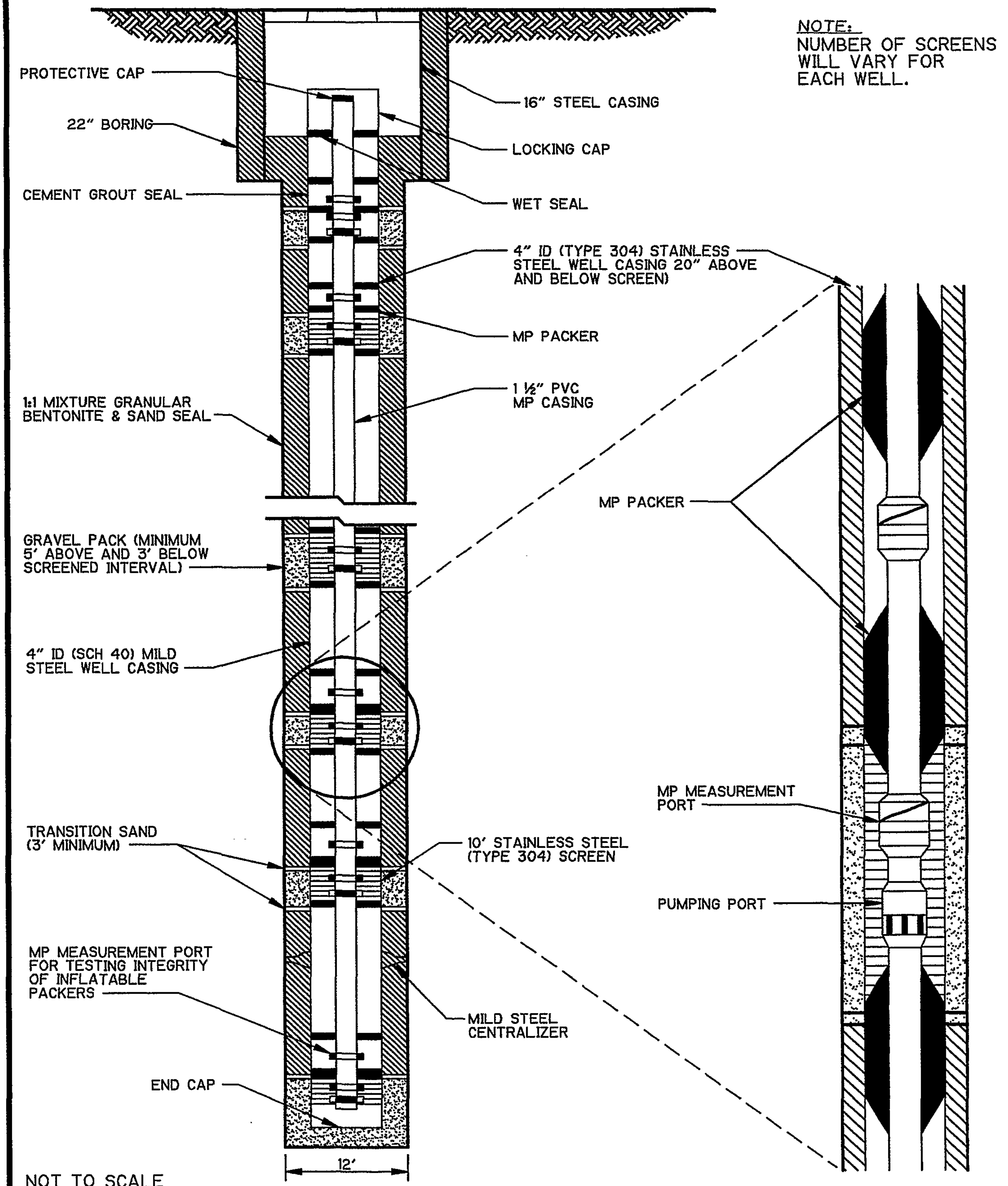
#### *3.1.1.4 MP System Installation*

Following well development and the video survey, the Westbay MP well system was installed inside each cased borehole. Completion reports, prepared by Westbay Instruments, Inc., describing the installation and construction of each MP system, were included as an appendix in the individual well completion reports.

In general, the MP system consists of 1.5-inch-diameter polyvinyl chloride (PVC) blank casing, couplings with measurement and pumping ports, and inflatable packers. The bottom packer for each screened zone is placed within the blank stainless steel casing. The upper packer, and a companion packer, are located within the blank stainless steel casing above each zone. The two packers straddling each perforated interval provide a seal along the interior of the steel well casing, thereby stopping cross-contamination and vertical movement of fluids within the well. The third packer is installed to form a quality assurance (QA) zone, so that fluid pressures can be monitored between perforated intervals, thereby testing the integrity of the packers. Bottom packers were not installed at the bottom perforated interval. A typical MP system configuration is shown on Figure 3-2. Table 3-2 summarizes the MP system installed at each monitoring well.

**Table 3-3**
Baldwin Park Operable Unit
Multiport Well Development Volumes

| Well Number | Flush Volume (gallons) | Total Volume Removed (gallons) | Net Volume Removed (gallons) | Average Volume Removed per MP Zone (gallons) |
|---|---|---|---|---|
| MW5-03 | 1,660 | 46,620 | 44,960 | 4,496 |
| MW5-05 | 1,350 | 24,780 | 23,430 | 5,858 |
| MW5-08 | 1,083 | 30,680 | 29,597 | 7,399 |
| MW5-11 | 1,000 | 24,736 | 23,736 | 7,912 |
| MW5-13 | 1,157 | 15,666 | 14,509 | 4,836 |
| MW5-15 | 1,907 | 18,102 | 16,195 | 5,398 |
| MW5-17 | 1,000 | 17,556 | 16,556 | 5,519 |
| MW5-18 | 1,063 | 18,900 | 17,837 | 5,946 |




Camp Dresser & McKee Inc. 5:26:03 10/05/96 09:32:01 MP-WELL J:\2581-112\CAD\

BALDWIN PARK OPERABLE UNIT PRE-REMEDIAL DESIGN

# TYPICAL DESIGN DETAIL FOR MULTIPORT MONITORING WELL

CDM
*environmental engineers, scientists, planners, & management consultants*

Figure 3-2

Once the MP well system was installed, piezometric pressures were measured to document the performance of all measurement ports prior to inflation of the packers. Following the pre-inflation pressure profile, the packers were inflated sequentially, starting with the bottom packer, using tap water provided by a nearby fire hydrant. Data collected from a post-inflation pressure profile confirmed that the packers were inflated properly and that a seal was present between each perforated interval. Pressure measurements conducted during MP casing installations are also included in the appendices of the individual well completion reports.

MP System Zone Purging

Well installation and development activities can sometimes create an unnatural circulation of formation fluids, thereby causing groundwater adjacent to the MP measurement ports to be non-representative of the formation fluids. Once the casing and packer seals of the MP system have been installed, these non-representative fluids can be removed by purging the MP monitoring zones. The strategy for purging the monitoring zones is highly dependent upon site conditions and can be done in one of two basic ways: (1) purging by natural groundwater flow, or (2) pumping or bailing to purge monitoring zones. Because the hydrogeologic conditions of the BPOU were favorable to relatively high groundwater movement, it was initially anticipated that natural groundwater flow would be sufficient to purge the MP monitoring zones. However, following review of analytical data generated from sampling the first four MP wells, it was determined that purging by natural groundwater flow was not sufficient to ensure stabilization of conditions in the monitoring zones. Therefore, monitoring zones in the last four MP wells (i.e., MW5-13, MW5-18, MW5-15 and MW5-08) were purged manually by bailing, in accordance with a request by EPA (EPA, November 17, 1995).

In wells MW5-13, MW5-18, MW5-15 and MW5-08, water was purged from each monitoring zone following installation of the MP system and packer inflation. Approximately three saturated casing volumes of water were purged from each zone to ensure that non-representative groundwater (i.e., groundwater that has been mixed in the casing from several individual zones during development and installation activities) was replaced by fresh formation water. The saturated casing volume (CV) for each perforated interval was calculated as follows:

| | | |
|---|---|---|
| CV | = | $(V_1 - V_2)$, in gallons, where: |
| $V_1$ | = | $\pi * (r_1^2 d_1) * 7.48$ gallons/ft$^3$ = volume of water between packers inside the 4-inch steel well casing; |
| $V_2$ | = | $\pi * (r_2^2 d_2) * 7.48$ gallons/ft$^3$ = volume of water displaced by the 1.5-inch PVC MP casing; |
| $\pi$ | = | 3.14; |
| $r_1$ | = | the radius of the 4-inch steel casing (feet); |
| $r_2$ | = | the radius to the outside of the 1.5-inch PVC MP casing (feet); |

$d_1$ = the thickness of the column of water in the 4-inch steel casing (feet) between packers; and

$d_2$ = the length of the 1.5-inch PVC MP casing between packers.

Zones were purged individually by opening up one pumping port with an open/close tool, which was provided by Westbay technical personnel, while the remaining pumping ports were closed. With one pumping port open, the MP well behaved like a typical, single-screened monitoring well. Therefore, fluids within the MP casing were hydraulically connected to the formation water during purging. Water from the inside of the MP casing was then bailed out of the well. The bailer was lowered during each run to the same depth in the MP casing, which was just above the uppermost pumping port, as a method to verify that the water contained inside the MP casing was not leaking to the outside formation. Purging progressed from the deepest zone to the shallowest zone.

Groundwater generated during zone purging activities was temporarily contained on-site in 55-gallon steel drums. Purge water was later combined with groundwater generated during the well development activities and disposed of as discussed in Section 3.2.

#### *3.1.1.5 Wellhead Elevation Survey*

Bush & Associates Inc. of Irvine, California was subcontracted to survey the eight MP wells installed during the BPOU groundwater monitoring program. Well locations were surveyed based on mean sea level and horizontal control with Los Angeles County benchmarks utilizing California coordinate system values (Zone 7 NAD 27). To be consistent with the coordinate system currently being used in EPA's database for the San Gabriel Basin, horizontal coordinates were also reported utilizing UTM values (Zone 11 NAD 83). Each well was horizontally located to the nearest 0.5 foot or meter (California or UTM coordinates, respectively). The elevation at the north rim of the MP casing and the monitoring well cover were surveyed to the nearest 0.01 foot at each well. In addition, ground surface elevations were surveyed to the nearest 0.10 foot. Surveyed northing and easting coordinates, as well as elevation data, are tabulated in Section 4 of this report.

#### *3.1.1.6 Water Quality Sampling*

Groundwater monitoring activities included five rounds of groundwater sampling of eight new MP monitoring wells. Due to the dates of installation, only two rounds of sampling were conducted on well MW5-08 and three rounds of sampling were performed on wells MW5-15 and MW5-18. Table 3-4 summarizes the sampling schedule conducted for each of the wells. Table 3-2 was included previously and summarizes construction details for each of the MP wells. Analytical results from groundwater sampling of the MP wells are tabulated in Section 4 of this report. Copies of the laboratory reports are included in Appendix B.

# Table 3-4
## Baldwin Park Operable Unit
## Sampling Schedule Summary

| Well Name | Well Recordation Number | Well Status [1] | Date Sampled [4]: Initial Sampling [2] | "30-Day" Sampling [2] | First Quarter Sampling [3] | Second Quarter Sampling [2] | Third Quarter Sampling [2] |
|---|---|---|---|---|---|---|---|
| **New MP Wells** | | | | | | | |
| MW5-03 (Zones 1-10) | BPW50301-10 | MP | Aug-95 | Sep-95 | Mar-96 | Jun-96 | Sep-96 |
| MW5-05 (Zones 1-4) | BPW50501-04 | MP | Aug-95 | Oct-95 | Mar-96 | Jun-96 | Sep-96 |
| MW5-11 (Zones 1-3) | BPW51101-03 | MP | Oct-95 | Nov-95 | Mar-96 | Jun-96 | Sep-96 |
| MW5-17 (Zones 1-3) | BPW51701-03 | MP | Oct-95 | Nov-95 | Mar-96 | Jun-96 | Sep-96 |
| MW5-13 (Zones 1-3) | BPW51301-03 | MP | Jan-96 | Feb-96 | Mar-96 | Jun-96 | Sep-96 |
| MW5-18 (Zones 1-3) | BPW51801-03 | MP | Jun-96 | Jul-96 | Sep-96 | | |
| MW5-15 (Zones 1-3) | BPW51501-03 | MP | Jul-96 | Aug-96 | Sep-96 | | |
| MW5-08 (Zones 1-4) | BPW50801-04 | MP | Aug-96 | | Sep-96 | | |
| **Existing Site Assessment/Observation/MP Wells** | | | | | | | |
| EPA MW5-01 (Zones 1-13) | EPAW5101-13 | MP | -- | -- | Mar-96 | Jun-96 | Sep-96 |
| ALRC MW-1R | W11AZW1R | MW | -- | -- | Mar-96 G | Jun-96 | Sep-96 |
| ALRC MW-3 | W11AZW03 | MW | -- | -- | Mar-96 G | Jun-96 G | Sep-96 G |
| ALRC MW-9 | W11AZW09 | MW | -- | -- | Mar-96 | Jun-96 G | Sep-96 G |
| Norac MW-1 | W10NCMW1 | MW | -- | -- | Mar-96 G | Jun-96 | Sep-96 |
| LA County 3030F (Key Well) | Z1000006 | O | -- | -- | Apr-96 | Jun-96 | Sep-96 |
| **Water Supply Wells** | | | | | | | |
| Transit Mix 2 (ALRC MW-4) | 11900038 | P | -- | -- | Mar-96 G | Jun-96 G | Sep-96 G |
| CalMat - E-Durbin | 01902920 | P | -- | -- | Apr-96 | Jun-96 | Sep-96 |
| Covina Irrig. Co. - Baldwin 3 | 01900882 | S | -- | -- | Oct-96 | | |
| City of Glendora 07G | 01900831 | P | -- | -- | Mar-96 G | Jul-96 | Sep-96 |
| LA County - Santa Fe 1 | 08000070 | P | -- | -- | Mar-96 | Jun-96 | Sep-96 |
| LPVCWD 02 | 01901460 | P | -- | -- | Apr-96 | Jul-96 S | Oct-96 |
| LPVCWD 03 | 01902859 | P | -- | -- | Apr-96 | Jul-96 S | Oct-96 |
| LPVCWD 04 | 08000062 | P | -- | -- | Apr-96 | Jul-96 S | Oct-96 |
| Polopolus - 01 | 01902169 | S | -- | -- | Jun-96 | Oct-96 | |
| SGVWC B4B | 51902858 | P | -- | -- | Apr-96 | Jul-96 S | Oct-96 |
| SGVWC B6C | 71903093 | S | -- | -- | Apr-96 | Jul-96 S | Oct-96 |
| SGVWC B6D | 78000098 | P | -- | -- | Apr-96 | Jul-96 S | Oct-96 |
| SWS 139W1 | 01901598 | P | -- | -- | Apr-96 | Jul-96 S | Oct-96 |
| SWS 139W4 | 08000069 | P | -- | -- | Apr-96 | Jul-96 S | Oct-96 |
| SWS 139W5 | 08000095 | P | -- | -- | Apr-96 | Jul-96 S | Oct-96 |
| VCWD 2 (W. Maine) | 01900028 | P | -- | -- | Apr-96 | Jul-96 S | Oct-96 |
| VCWD 3 (Morada) | 01900029 | S | -- | -- | Mar-96 G | Jul-96 | Sep-96 |
| VCWD 5 (Paddy Lane) | 01900031 | S | -- | -- | Jul-96 | Sep-96 | |
| VCWD 9 (Big Dalton) | 01900035 | S | -- | -- | Mar-96 | Jun-96 | Sep-96 |
| VCWD 10 (Lante) | 08000060 | P | -- | -- | Apr-96 | | |
| VCWD 11 (Palm Ave.) | 08000039 | S | -- | -- | Jul-96 | Sep-96 | |

-- Not a scheduled sampling event.

[1] Well Status: MP = multiport well; MW = site assessment monitoring well; O = observation well; P = water supply well (in service); and S = water supply well (not in service).

[2] Samples analyzed for VOCs (Subarea 1) or VOCs, nitrate and nitrite (Subarea 3).

[3] Samples analyzed for VOCs, nitrate, nitrite, metals, general minerals and radon.

[4] Samples were collected by CDM for WQA, unless otherwise noted (i.e., Stetson Engineers [S] for Watermaster, or GeoSyntec Consultants [G] for Azusa Land Reclamation Co. [ALRC]).

The following paragraphs summarize the sampling activities performed on each of the MP wells. Because field activities were conducted in general accordance with detailed descriptions and standard operating procedures provided in the project SAP and specifications, a general discussion of field activities has been provided in this report. In a few instances a greater level of detail has been provided to supplement the procedures described in the project planning documents. Deviations from the project planning documents have been noted in sections where they are relevant.

*3.1.1.6.1 Initial and "30-Day" Sampling Events (Rounds 1 and 2)*

In accordance with the SAP, groundwater samples were collected initially from each MP well soon after (i.e., less than five days) Westbay installation activities were complete. For wells where individual zones were purged prior to sampling (i.e., wells MW5-08, MW5-13, MW5-15 and MW5-18), the initial sampling event was conducted approximately two weeks after purging activities were complete. A second round of groundwater sampling was then performed approximately one month after the initial sampling event (i.e., the "30-day" sampling event, as specified in the SAP). However, due to access constraints, MW5-05 was not able to be sampled until two months after initial sampling. Samples collected from wells located in the northern portion of the BPOU (Subarea 1) were analyzed for VOCs, and samples collected in the southern portion of the BPOU (Subarea 3) were analyzed for VOCs plus nitrate and nitrite. Nitrates and nitrites were reported as nitrogen (as N). Results from the first two rounds of groundwater sampling were presented in the respective well completion reports and are also in Section 4 of this report.

*3.1.1.6.2 First, Second, and Third Quarterly Sampling Events (Rounds 3, 4 and 5)*

To the extent possible, the first, second and third quarterly sampling events of the newly-installed MP wells were scheduled to coincide with existing sampling programs (i.e., California Department of Health Services' Title 22 quarterly sampling of active water supply wells and the Los Angeles Regional Water Quality Control Board's [LARWQCB's] Well Installation Program [WIP] sampling of existing site assessment and inactive water supply wells). Because wells MW5-08, MW5-15 and MW5-18 were installed after the first and second quarterly sampling events were completed, one quarterly sampling event was conducted for these three wells.

During the first round of quarterly sampling, groundwater samples were collected from each sampling interval from each new MP well and analyzed for a comprehensive suite of parameters. These parameters included: VOCs, general minerals (i.e., calcium, magnesium, potassium, sodium, chloride, sulfate, carbonate, bicarbonate and hardness), nitrates and nitrites, metals (i.e., aluminum, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel and zinc), radon, and total dissolved and suspended solids (TDS and TSS, respectively).

During the second and third quarterly sampling events, groundwater samples were collected approximately three and six months after the first quarter samples, respectively. Samples collected from wells located in Subarea 1 were analyzed for VOCs. Samples collected from wells located in Subarea 3 were analyzed for VOCs plus nitrate and nitrite.

Analytical results from the three quarterly sampling events are discussed in Section 4 of this report.

### *3.1.1.6.3 Sampling Procedures*

As described in the SAP, groundwater samples were collected from each depth-specific zone by using a specially designed sampling tool, provided by Westbay Instruments. The sampling tool and up to four 250 milliliter (ml) stainless steel cylinders were decontaminated prior to the first sample collection and between each zone. At the surface, the sampling tool and empty cylinders were connected in series and then evacuated using a hand-operated vacuum pump. Once prepared, the tool and cylinders were lowered and positioned at the desired zone. Through a series of commands, the sampling tool was activated at the surface, which caused the surface of the tool to seal against and open the measurement port. Once the measurement port was opened, a valve was opened on the sampling tool, which allowed formation water located between the MP casing and outer steel casing to flow through the sampling tool and into the evacuated cylinders. Once filled, the sample valve and measurement ports were closed, and the tool and filled cylinders were brought to the surface. The zones were sampled sequentially, beginning with the bottom zone.

Once the sample tool and cylinders were recovered at the surface, the sample was depressurized and decanted into alternate containers. The first sample recovered from each zone was used to measure field parameters and then discarded. Temperature, turbidity, pH and electrical conductivity (EC) measurements were monitored at each zone and recorded in the field logbook. Field parameter data are summarized on tables included in Appendix C. Subsequent samples collected from each zone were then used to fill laboratory-provided sample containers. Containers for VOC analyses were filled first, allowing no headspace. If headspace was present, the sample was discarded and a new sample container was filled. Containers for inorganic analyses were filled with the remaining sample from that zone. Subsequent sampling of each zone was conducted if additional sample volume was required for the inorganic containers. Once filled, each sample container was labeled, packaged for shipment, and placed into a cooler containing either ice or blue ice.

The project SAP specified that groundwater samples submitted for analysis of metals, cations and hardness (first quarterly sampling event only), were to be filtered in the field using a 0.45 micron disposable filter and than transferred into a sample container preserved with acid. However, due to the limited sample volume collected during each run to the sampling zone (maximum of 1 liter), field filtering of the samples was not feasible. Therefore, the samples were initially placed in unpreserved containers and then filtered immediately upon receipt by the analytical laboratory.

The SAP also specified that if samples submitted for nitrates and nitrites were collected on Fridays or weekends, then the sample would be field filtered and preserved with sulfuric acid, so that the holding time could be extended from 48 hours to 28 days. However, prior arrangements were made with the laboratory, and the sampling events were scheduled such that the analytical laboratory could analyze the nitrate and nitrite samples within the 48 hour holding time. Therefore, field filtering and preservation of the nitrate and nitrite samples were not required.

#### *3.1.1.6.4 Analytical Methods*

The analytical methods used during this project are described in the project SAP, however, a change in VOC methods was necessary due to a change in the project laboratory. During the later portion of the project, the original project laboratory (Thermo Analytical) down-sized its laboratory capabilities, and was no longer able to provide analytical services in support of the BPOU Pre-Remedial Design Groundwater Monitoring Program. Following notification of this decision, Quanterra was selected as the replacement laboratory, based on their experience performing analyses for similar projects and their ability to fulfill the analytical requirements of this project. Quanterra Environmental Services is certified through California Department of Health Services' Environmental Laboratory Accreditation Program (ELAP).

Although Quanterra was selected as the most suitable replacement, they were equipped to analyze VOCs using EPA Method 8260, rather than EPA Method 8021. When the SAP was written, EPA Method 8021 was selected as the analytical method of choice for this project, primarily because of its reduced cost and lower detection limits. However, Quanterra was able to achieve reporting limits that were equal to, or lower than, MCLs while using EPA Method 8260. In addition, Method 8260 is a gas chromatography/mass spectrometry method, which nearly eliminates the possibility of false positive detections. Based on these factors, the change in the analytical method for determination of VOCs was approved by EPA through oral and written communication (EPA, August 14, 1996).

### *3.1.1.7 Water Level Monitoring*

Included as part of the groundwater monitoring program, water level measurements were recorded for each of the MP wells during the initial and "30-day" sampling events, and then monthly beginning with the first quarterly sampling event (March 1996) through the third quarterly sampling event (September 1996).

Because there is no communication between the groundwater and the water in the MP well casing, conventional water level measurements could not be obtained using only an electric water level indicator. Rather, piezometric pressure measurements were recorded within each screened interval of the MP well. Piezometric pressures were recorded at individual measurement ports by utilizing an electric pressure probe in conjunction with a surface data control unit. The pressure probe is equipped with a fluid pressure transducer. The fluid pressure measured inside the Westbay MP casing was compared to the formation pressure outside the casing. This comparison was used to calculate piezometric pressures at discrete screened intervals, which in turn were used to calculate static water levels. All measurements were recorded in the field logbook and on field data sheets. Static water levels and the corresponding groundwater elevations have been compiled in Section 4 of this report.

## *3.1.2 Water Supply and Site Assessment Well Sampling*

A total of 21 water supply wells, four site assessment wells, the Key Well and one EPA MP well were included in the groundwater monitoring program. A listing of the wells monitored and a summary of the well completion details for each of these wells is provided in Table 3-5 and the locations are illustrated on Figure 3-1. Three quarterly rounds of sampling were performed on the

**Table 3-5**
Baldwin Park Operable Unit
Summary of Well Construction Details - Existing Wells

| *Well Recordation Number* | *Well Owner* | *Well Name* | *BPOU Subarea* | *Total Depth (feet)* | *Number of Screened Intervals* | *Screen Intervals (feet)* | *Well Status* [1] |
|---|---|---|---|---|---|---|---|
| 11900038 | Transit Mix (ALRC) | 2 (ALRC MW-4) | 1 | 630 | 1 | 350-614 | P |
| 01902920 | CalMat (Conrock Co.) | E-Durbin | 3 | 500 | 2 | 238-314; 366-484* | P |
| 01900882 | Covina Irrigating Co. | Baldwin 3 | 3 | 500 | 2 | 198-251; 278-484* | S |
| 01900831 | City of Glendora | 7G | 1 | 500 | 1 | 252-474 | P |
| 01903012 | H. Via Trust | 01 | 3 | -- | -- | -- | A |
| 08000070 | L.A. County | Santa Fe 1 | 1 | 451 | 1 | 290-435 | P |
| 01901460 | La Puente Valley County Water District | 02 | 3 | 947 | 8 | 600-604; 636-675; 678-739; 742-766; 825-833; 835-845; 897-935; 936-940* | P |
| 01902859 | La Puente Valley County Water District | 03 | 3 | 80 | 1 | 620-770* | P |
| 08000062 | La Puente Valley County Water District | 04 | 3 | 743 | 1 | 550-725* | P |
| 01902169 | Polopolus, et al. | 01 | 1 | 280 | 1 | 120-280 | Ag |
| 51902858 | San Gabriel Valley Water Co. | B4B | 3 | 1,178* | 2 | 920-940; 950-1,154* | P |
| 71903093 | San Gabriel Valley Water Co. | B6C | 3 | 526* | 3 | 275-420; 440-465; 480-506* | S |
| 78000098 | San Gabriel Valley Water Co. | B6D | 3 | 1,078 | 6 | 760-769; 824-836; 855-938; 942-952; 980-992; 1,024-1,032 | P |
| 01901598 | Suburban Water Systems | 139W1 | 3 | 400 | 1 | 120-349 | P |
| 08000069 | Suburban Water Systems | 139W4 | 3 | 846 | 3 | 566-642; 676-695; 787-825* | P |
| 08000095 | Suburban Water Systems | 139W5 | 3 | 1,220* | 1 | 750-1,060* | P |

**Table 3-5 (Continued)**
Baldwin Park Operable Unit
Summary of Well Construction Details - Existing Wells

| *Well Recordation Number* | *Well Owner* | *Well Name* | *BPOU Subarea* | *Total Depth (feet)* | *Number of Screened Intervals* | *Screen Intervals (feet)* | *Well Status* [1] |
|---|---|---|---|---|---|---|---|
| 01901611 | Suburban Water Systems | 112W1 | 3 | -- | -- | -- | A |
| 01901600 | Suburban Water Systems | 139W3 | 3 | -- | -- | -- | A |
| 01900028 | Valley County Water District | 2 (West Maine) | 1 | 600 | 1 | 250-580 | P |
| 01900029 | Valley County Water District | 3 (Morada) | 1 | 600* | 1 | 275-585* | S |
| 01900031 | Valley County Water District | 5 (Paddy Lane) | 3 | 600 | 1 | 300-585 | SE |
| 01900035 | Valley County Water District | 9 (Big Dalton) | 3 | 600 | 1 | 250-582* | SE |
| 08000060 | Valley County Water District | 10 (Lante) | 1 | 600 | 1 | 275-577* | P |
| 08000039 | Valley County Water District | 11 (Palm Ave.) | 3 | 622 | 2 | 540-582; 594-602 | S |
| W11AZW1R | Azusa Land Reclamation Co. | MW-1R | 1 | 460 | 1 | 258-455 | MW |
| W11AZW03 | Azusa Land Reclamation Co. | MW-3 | 1 | 385 | 1 | 180-385 | MW |
| W11AZW09 | Azusa Land Reclamation Co. | MW-9 | 1 | 451 | 1 | 195-450 | MW |
| W10NCMW1 | Norac | MW-1 | 1 | 340* | 1 | 255-310* | MW |
| Z1000006 | L.A. County Flood Control District | 3030F (Key Well) | 3 | 286 | 1 | 80-284* | O |

## Table 3-5 (Continued)
Baldwin Park Operable Unit
Summary of Well Construction Details - Existing Wells

| *Well Recordation Number* | *Well Owner* | *Well Name* | *BPOU Subarea* | *Total Depth (feet)* | *Number of Screened Intervals* | *Screen Intervals (feet)* | *Well Status*[1] |
|---|---|---|---|---|---|---|---|
| EPAW5113 | EPA | MW5-01 | 3 | 1,521 | | 216-226 | MP |
| EPAW5112 | | | | | | 287-297 | |
| EPAW5111 | | | | | | 335-345 | |
| EPAW5110 | | | | | | 430-440 | |
| EPAW5109 | | | | | | 523-533 | |
| EPAW5108 | | | | | | 640-650 | |
| EPAW5107 | | | | | | 765-775 | |
| EPAW5106 | | | | | | 875-885 | |
| EPAW5105 | | | | | | 1,030-1,040 | |
| EPAW5104 | | | | | | 1,123-1,133 | |
| EPAW5103 | | | | | | 1,256-1,266 | |
| EPAW5102 | | | | | | 1,387-1,397 | |
| EPAW5101 | | | | | | 1,496-1,505 | |

*Notes:*
[1] Well Status:

| | | |
|---|---|---|
| A | = | Abandoned (Confirmed by well owner) |
| Ag | = | Inactive agricultural well |
| MW | = | Site assessment monitoring well |
| O | = | Observation well |
| P | = | Water supply well; in service |
| S | = | Water supply well; not in service due to VOC and/or nitrate contamination |
| SE | = | Water supply well; not in service, operable; proposed extraction well |
| * | = | Data were provided by well owners and are different than data provided in EPA's ROD |

site assessment, observation and EPA MP wells. However, there were a few cases where a total of three rounds of sampling could not be performed on some of the water supply wells due to site access limitations or the well's operational condition. Table 3-4 summarizes the sampling schedule conducted for each of the wells included in the monitoring program.

To the extent possible, site assessment and water supply wells were purged and sampled by the owner or Main San Gabriel Basin Watermaster (Watermaster) for the water purveyor, in accordance with procedures previously established by, and approved for, LARWQCB's EMP or DHS' Title 22 quarterly sampling programs. If the existing sampling schedule of these wells did not coincide with the schedule proposed in the SAP, then the samples were collected by WQA, in accordance with procedures specified in the SAP. All other existing wells included in the monitoring program were sampled by WQA in accordance with the procedures specified in the SAP. Table 3-4, the Sampling Schedule Summary, also indicates who was responsible for the collection of each sample.

Prior to collecting samples, each site assessment, observation or water supply well was pumped until field parameters (i.e., temperature, pH, EC and turbidity) had stabilized and a minimum of three casing volumes had been removed from the well. All field measurements were recorded on well purging forms and are included in Appendix C. For water supply wells that were in operation prior to the sampler's arrival, field parameters were recorded and the sample was immediately collected. For inactive water supply wells that did not have operable motors or where the electricity had been disconnected (in accordance with DHS requirements), Beylik Drilling was contracted by WQA to provide and install all equipment necessary to collect a sample (i.e., temporary motors and/or electricity and discharge piping).

Samples were collected as soon as purging and final measurements of field parameters were complete. Samples were collected through existing access points (e.g., spigots) or from a stainless steel fitting in-line with the discharge piping. To the extent possible, flow rates were reduced at the time of sampling to minimize aeration caused by pumping.

The first quarterly sampling event was scheduled to coincide with sampling round 3 of the newly-installed MP wells. Groundwater samples were analyzed for a comprehensive suite of parameters which included: VOCs, general minerals (i.e., calcium, magnesium, potassium, sodium, chloride, sulfate, carbonate, bicarbonate and hardness), nitrates and nitrites, metals (i.e., aluminum, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel and zinc), radon, and total dissolved and suspended solids (TDS and TSS, respectively).

The second and third sampling events were scheduled to coincide with sampling rounds 4 and 5 of the MP wells, which followed approximately three and six months, respectively, after the first quarterly sampling event. Samples collected from Subarea 1 were analyzed for VOCs; whereas, samples collected from Subarea 3 were analyzed for VOCs plus nitrate and nitrite.

Analytical data from the three quarterly rounds of sampling and data that were provided by Watermaster and the well owners are compiled in Section 4 of this report. Copies of the laboratory reports from samples collected by WQA are included in Appendix B of this report.

In addition to water quality sampling, water level measurements were recorded monthly for the site assessment, water supply, observation and existing MP wells. When possible, water level data were collected by the site assessment and the Key Well owners/operators. As with the site assessment wells, purveyors were contacted to obtain monthly water levels for the water supply wells. For the remaining wells in the monitoring program, water levels were measured monthly by WQA, to the extent possible. In some cases, however, monthly static water levels were not obtainable due to the operating status or condition of the well. Piezometric pressures were also monitored on a monthly basis in EPA's MP well by WQA. Static water levels were then calculated using the pressure measurements. Water level data generated during the groundwater monitoring program are compiled in Section 4.

### *3.1.3 Aquifer Tests*

As outlined in the Aquifer Test Plan (CDM, 1995), based on existing well locations and an evaluation of all existing well data, a total of four aquifer tests were performed: three existing water supply wells in the BPOU upper area (Subarea 1) and one currently inactive water supply well in the lower area (Subarea 3). The following wells were selected for such testing due to their proximity to the existing contamination plume, location relative to proposed extraction, and perforation intervals:

- In Subarea 1, aquifer tests were performed on wells: AZ-2 owned by Transit Mix, Santa Fe No. 1 owned by Los Angeles County and VCWD-08 (Arrow) owned by Valley County Water District. The wells which were monitored during the aquifer tests are W11AZW04, OSCO MW-4 and VCWD-10 (Lante), respectively.

- In Subarea 3, a step drawdown test was performed on VCWD-09 (Big Dalton). No observation wells were available to monitor water level changes produced by pumping in Big Dalton.

Three types of aquifer tests were conducted: step drawdown, constant rate and recovery. Prior to pumping and during pumping and recovery, water levels in pumping and observation wells were monitored using electronic pressure transducers in the pumping well and in adjacent observation wells. Data collected from adjacent wells were used to monitor the effects of drawdown on the system. Data were recorded in a digital format with an automated data acquisition system. Manual measurements were made using an electric water level indicator to calibrate and ensure the accuracy of the transducer readings. Transducer readings were collected on a typical logarithmic progression (e.g., seconds to minutes early in the pumping and recovery periods, to every two hours towards the later stages). Manual measurements were made as frequently as possible in the early stages of pumping and recovery, and every two hours in the later stages. During test pumping, temperature, electrical conductivity (EC), and pH of the discharge water were measured and recorded. The total volume pumped was recorded for each well pumped. The following sections describe the tests conducted at each well.

Near the completion of the constant discharge test at Arrow and Santa Fe No.1, a water sample was collected from the well head for laboratory analysis. The parameters analyzed included VOCs, radon, metals, and general minerals.

Arrow Well

A 72-hour constant discharge test followed by a recovery test was performed at Arrow Well during the period of January 29 through February 1, 1996. The Lante Well, located approximately 100 feet away from the pumping well, was used as an observation well during the test.

Big Dalton Well

Background water levels were monitored for two days prior to the test in order to determine non-pumping water level trends. A step drawdown test was performed on April 1, 1996. The step drawdown test consisted of pumping the well at a constant rate for two hours at each of four different designed flow rates or steps (750, 1500, 2250 and 3040 gallons per minute (gpm)). Pumping rates were measured using a totalizer located approximately ten feet from the well head. The water levels were monitored during the pumping and recovery periods. The average discharge rate for each step, corresponding drawdown and specific capacity values are shown in Section 4.

A constant discharge test was not conducted at the Big Dalton Well because of the high degree of variability in pumping rates for the first 3 to 5 minutes in the step drawdown test when the pump was first turned on. Because the majority of the drawdown occurs in the first portion of the pumping test, the variability in initial pumping would result in unusable data.

Santa Fe No. 1

Aquifer tests were performed using Santa Fe Well No. 1 as the pumping well and Oil and Solvent Recovery Company (OSCO) well MW-4 as an observation well during the time period of February 6 to February 12, 1996. The aquifer test consisted of step drawdown test, followed by a constant discharge test, recovery test and collection of background data.

The step drawdown test was performed on February 6, 1996. The test consisted of pumping the well at a constant rate for one hour at 3 different flow rates (1,532, 1,920, and 2,625 gpm). At the completion of each step, the well was allowed to recover to within 85 percent of the static water level. A 72-hour constant discharge test at a flow rate of 2,700 gpm was performed immediately following the step drawdown test . Water levels were collected prior to, during, and after the test by manual measurement with a water level indicator and also pressure transducers and data logger. In order to evaluate outside influences (e.g., nearby pumping wells, etc.), background water level and barometric pressure measurements were also monitored hourly for a 24-hour baseline period prior to initiating step drawdown testing activities.

AZ-2 Well

Because of the proximity of the AZ-2 well to the proposed extraction area, a pumping test was performed. AZ-2 is used to supply water for the Transit Mix gravel operation, therefore, the pumping tests had to be modified to their pumping schedule and thus short term tests were performed. The short term tests consisted of installing pressure transducers at AZ-2 (the pumping well) and ALR MW-10 (the monitoring well) on February 17, 1996 in order to monitor background water levels. The constant discharge test was delayed because of rain (the gravel operation does not operate during these conditions), therefore one week of background water levels were collected.

The short term constant discharge tests were conducted on three consecutive days (February 26th through 28th). Generally the well was pumped at a rate of 1,730 gpm for a period of 12 hours and then allowed to recover until the following morning.

## 3.2 Disposal of Investigation-Derived Waste

Investigation-derived waste (IDW) generated during field activities included both liquid and solid wastes. The general types of IDW generated included soil cuttings from the installation of eight MP wells, drilling fluids, groundwater generated during aquifer testing, well development and sampling activities, decontamination fluids, disposable health and safety equipment and clothing, as well as other miscellaneous items (i.e., plastic sheeting, empty cement and sand bags, etc.).

Miscellaneous solid waste items were containerized in steel 55-gallon drums and later disposed of directly into solid waste dumpsters. Liquid wastes generated during drilling activities included drilling mud and development water from each well. Groundwater generated during MP zone purging activities was temporarily contained on-site in 55-gallon steel drums. All other liquid wastes were initially containerized in 20,000-gallon Baker tanks, which were labeled with the materials stored, origin of materials, volume, and date.

At various times throughout drilling activities at each well site, solid and liquid wastes were transported from the well site to a centralized staging area. Liquid wastes were transferred using a vacuum truck from the original Baker tank located at well site to a new storage tank located at the staging area. During transport of liquids to the staging area, a representative from CDM or Beylik escorted the vacuum truck to ensure that the liquids were transferred to the correct Baker tank and that the new storage tank was properly labeled and identified.

### *3.2.1 Drilling Waste*

Soil cuttings were contained in covered roll-off bins. Each bin was labeled with the well identification, depth interval of cuttings, and date generated. As bins were filled, one sample was collected from each roll-off bin. Soil samples representing two roll-off bins were then composited into one sample and submitted for VOC analysis. Generally, VOC results from soil cutting samples were below analytical detection limits.

In addition to VOCs, a total of three composite samples, which represented soil collected from wells MW5-11, MW5-17, and MW5-18, were submitted for metals analyses. The composite samples were analyzed for California Title 26 metals using the waste extraction test (WET) digestion procedure in order to determine the soluble fraction of each metal in the samples. The leachate from each sample was then analyzed using SW-846 methods (EPA Method 6000/7000 series) to determine the soluble concentration of each metal. Analytical results did not show any metals at concentrations greater than the STLC limits.

Based on these analytical results, all soil cuttings generated during drilling activities were transported to Azusa Land Reclamation Company (ALRC) of Azusa, California, for disposal. In total, 710 tons of soil from the eight wells were transported and disposed of at ALRC.

All drilling mud generated from drilling activities was placed in 20,000-gallon Baker tanks. Approximately 150,750 gallons of drilling mud were generated during drilling of the eight wells. Following installation of each well, one composite sample was collected from each Baker tank and submitted to the laboratory for VOC analysis. Analytical results indicated low levels of VOC concentrations (i.e., less than respective MCLs) in several of the samples.

Drilling fluids generated during drilling of wells MW5-03, MW5-05, MW5-11, MW5-13 and MW5-17 were treated at the staging area, following completion of each well, by Sinclair Well Products of Cerritos, California, using a centrifugal process to separate the mud into solids and clear water. After separation was complete, clear liquids from each well site were discharged to the storm drain system. During discharge, field parameters (i.e., pH, temperature, turbidity, EC and chlorides) were monitored and laboratory samples collected to ensure that the quality of the water met discharge requirements imposed by the LARWQCB (LARWQCB, 1991). The solids removal treatment process resulted in elevated chloride concentrations in the treated water from wells MW5-03 and MW5-05. To meet the discharge requirements, hydrant water was used to dilute the treated water prior to discharge into the storm drain. Solids removed from this process were placed in roll-off containers and then transported to ALRC for disposal.

Drilling fluids generated during drilling of wells MW5-08, MW5-15 and MW5-18 were transported to Envirotek, of Arvin, California for disposal. Envirotek is a California non-hazardous waste disposal facility and permitted through Kern County Environmental Health Department.

### *3.2.2 Development and Purge Water Disposal*

In total, 197,040 gallons of groundwater were generated during development activities of the eight MP wells. Following well installation activities at each site, one representative sample was collected from each Baker tank containing development water and submitted to the analytical laboratory for VOC analysis. With the exception of wells MW5-05 and MW5-08, analytical results indicated that development water from the remaining six wells contained concentrations of at least one VOC at levels that exceeded MCLs. Typically, TCE and PCE were the contaminants detected at elevated concentrations in the development water. Based on these results, 130,240 gallons of development water were treated at the staging area using a portable air stripper to reduce VOC concentrations to allowable discharge limits. Following treatment, the development water was discharged to the storm drain system. Development water from wells MW5-05 and MW5-08 did not contain elevated VOC concentrations, therefore, VOC treatment was not required and the water was discharged directly to the storm drain. During discharge of treated and untreated water, representative samples were periodically collected and analyzed for a broad suite of parameters to verify the water met LARWQCB's discharge requirements.

During quarterly groundwater sampling events, purged groundwater from site assessment wells was treated and disposed at the well owner's facilities. Water generated during quarterly sampling of the observation well and inactive water supply wells was containerized in Baker tanks (or 500-gallon poly tank for the observation well) at each well site. Analytical results from each quarterly sampling event indicated that the purge water contained elevated VOC concentrations. Therefore, water generated from these wells was treated with granular-activated carbon to reduce VOC concentrations prior to discharge to the storm drain system. During discharge, a representative sample was collected and analyzed for VOCs to verify the water met LARWQCB's discharge requirements. In total, 212,000 gallons of purge water from quarterly groundwater sampling activities were discharged to the storm drain system.

### *3.2.3 Aquifer Test Discharge*

Large quantities of water were generated during the pumping tests. Two of the wells tested, Arrow and Big Dalton, have well head treatment systems, therefore, the discharge water was treated prior to discharge into the distribution systems. AZ-2 and Santa Fe No.1 do not have an existing treatment system. The Santa Fe No. 1 well was pumped and discharged into a lake via a "rocky river". AZ-2 was being used for the sand and gravel operation during the pumping tests.

## 3.3 Equipment Calibration and Maintenance

Prior to use, all field equipment was checked and calibrated to verify that it was in good working order. The calibration, maintenance, and operating procedures for all instruments were based upon manufacturer's instructions. All maintenance and calibration operations were documented in the field logbook. General calibration and maintenance procedures that were followed during the field program were provided in the project SAP.

## 3.4 Sample Handling and Management

The following sections briefly discuss some of the various sample management procedures that were followed during the field activities. Sampling handling and management procedures generally followed those specified in the project SAP. Deviations from the project SAP are also presented in the following sections.

### *3.4.1 Sample Identification*

A coding system was used to identify each sample collected during the field activities. The coding system allowed tracking and retrieval of information concerning a particular sample, and was used to assure that each sample was uniquely identified. Each sample was identified by site number, sample media type, location type or station, and date. The site identification for all samples collected during this investigation was BP, representing the Baldwin Park OU. Codes for sample media type designations were as follows:

GW = Groundwater samples

Quality control (QC) codes were appended to the well number, where appropriate. The following QC codes were used:

P = Performance Evaluation (PE) check
M = Travel Blank (not used)
F = Field Blank
N = Decontamination Rinsate Blank
K = Split (GW samples)

Typical sample identifications are shown below:

| Site Number | Sample Media | Well No./Recordation No. | Date |
|---|---|---|---|
| BP- | GW- | MW50203- | 072595 |
| BP- | GW- | 51902858- | 060495 |

For all MP wells, the last two digits of the well number corresponded to a specific sample port, or depth interval. Sample port designations were determined at the time of MP well installation and were numbered sequentially, with the deepest port designated as -01 and the shallowest port, n. With this numbering system, each sample interval within the MP well was identified as an individual well. The last six digits of each sample indicated the date that the sample was collected. QC codes (i.e., N, F, K, etc.) were appended to the well number in the sample identification. For example, if an equipment decontamination rinsate blank was collected on July 13, 1996 after the collection of a groundwater sample from port 3 of MP well MW5-13, the QC sample was identified as BP-GW-MW51303N-071396.

### 3.4.2 Sample Containers and Preservation

Sample preservation, holding time, container, and volume requirements for groundwater samples were summarized in the project SAP. For metals analyses, however, samples were not field filtered as specified in the SAP. Because of the limited sample volume that could be collected from each MP zone, samples collected for metals analyses were placed into unpreserved sample containers and then filtered immediately after receipt by the analytical laboratory. Typically, samples were delivered to the analytical laboratory on the day of sample collection. To keep field protocols consistent throughout the project, samples collected for metals analyses from wells other than MP wells were also collected as unfiltered samples and placed into unpreserved containers.

A second deviation from the SAP was with the collection of samples for radon analyses from the MP wells. Because of the limited sample volume, the sample collection procedure specified in Draft EPA Method 913 (which specifies the collection method for samples collected from water supply wells) was modified for MP wells. Rather than collecting the sample by submerging the sample container inside a larger vessel while the source water overflowed out of the larger vessel, radon samples from MP wells were collected as if they were for VOC analysis. That is, the sample was poured directly from the MP sample cylinders, with as little agitation as possible, into two unpreserved 40-ml glass vials. The vials were filled completely, allowing zero headspace. All containers for groundwater sample collection were procured through the analytical laboratory and were not rinsed before sampling.

### 3.4.3 Sample Packing and Shipment

All samples collected during this field program were packed and shipped for laboratory analysis in accordance with methods specified in the SAP. Glass sample containers were placed in resealable plastic bags with packing material (i.e., foam dividers) to prevent breakage during shipment. Blue ice or bagged ice were placed in the sample coolers to comply with preservation requirements.

A Chain-of-Custody Record was placed in a resealable plastic bag and into the sample cooler. Because the samples were transported directly the laboratory by CDM personnel, in private or company- owned vehicles, the sample coolers were not sealed with strapping tape or custody seals.

## 3.5 Documentation of Field Activities

Field activities (e.g., well drilling and installation, water quality sampling and field parameter measurements, aquifer testing, etc.) were documented in field logbooks, which were provided for each MP well location and type of activity. Field logbooks were used to record all data collection activities at the site or any deviations from the SAP. Entries were made in pen and erasures were not permitted. If an incorrect entry was made, the data were crossed out with a single line and initialed. Field logbooks were bound and contained water resistant paper with consecutively numbered pages.

## 3.6 Field Quality Assurance/Quality Control Procedures

Field quality control (QC) samples (i.e., split groundwater samples, equipment decontamination rinsate blanks, field blanks, performance evaluation samples and laboratory QC samples) were collected and handled in accordance with the procedures specified in the project SAP. Blank samples were collected at a target frequency of one blank per day for each parameter. The order of collection preference was: (1) decontamination rinsate blank; (2) field blank; and, (3) travel blank. Because either decontamination or field blanks were collected each day of sampling, the submittal of travel banks was not required. Equipment decontamination was also performed in accordance with the procedures specified in the project planning document.

With the exception of VOCs, all other analyses are for the purposes of treatment system design. Therefore, the collection of samples to determine background concentrations was not required for this sampling program. The following sections briefly discuss the field QC program and any deviations from the project SAP. Sample analytical results of field QC samples are compiled in Section 4 of this report.

### *3.6.1 Duplicate Samples*

At a minimum, duplicates of groundwater samples were collected at an approximate rate of 10 percent of the samples collected. Duplicate samples were collected, preserved, packaged, labeled, and sealed in a manner identical to the other samples being collected. Duplicates were collected from wells where moderate levels of contamination were anticipated. Duplicate groundwater samples were collected as splits. For example, a duplicate groundwater sample was collected by splitting the sample between sample containers. In other words, a VOC container for the groundwater sample was filled first, and then a second VOC container was filled, which was considered the duplicate sample. Sample containers for additional groundwater analyses were filled in the same manner. Duplicate samples were analyzed for the same target analytes as the original sample.

### 3.6.2 Decontamination Rinsate Blanks

Decontamination rinsate blanks were comprised of the final rinse water from decontamination of equipment. The blank was prepared in the field by pouring the appropriate "blank" water through the sampling equipment and into the appropriate sample containers after equipment decontamination. For blanks targeted for organic analyses, laboratory provided organic-free water was used as the "blank" water; whereas, deionized/distilled water was used for the collection of blanks targeted for inorganic analyses. The rinsate blank served as a check to verify the effectiveness of decontamination procedures. A decontamination rinsate blank was collected at a target frequency of one per day. With the exception of radon, decontamination rinsate blanks were analyzed for all target analytes submitted for analysis on that day.

### 3.6.3 Field Blanks

A field blank consisted of laboratory-provided organic-free water, and was prepared by pouring in the field, the appropriate volume of water from a contaminant-free container into the sample container without contacting sampling equipment. The field blank served to emulate conditions while collecting the groundwater samples and was used to measure possible sample contamination resulting from ambient field/site conditions, such as fugitive dust or vapors. Field blanks were collected during water supply well sampling, when equipment decontamination was not necessary and was submitted to the laboratory for VOC analyses.

### 3.6.4 Performance Evaluation (PE) Samples

A total of three laboratory performance evaluation (PE) samples were submitted to the laboratory during the groundwater sampling program. PE samples are materials of known composition and concentrations that are prepared by an independent source, which are used to provide a measure of analytical performance and analytical method bias (accuracy). Each PE standard was submitted for VOC analysis and contained analytes that were expected to occur in groundwater at the BPOU. In addition, the PE sample submitted in April 1996 was analyzed for metals and general minerals. PE samples were submitted as double-blind samples to the analytical laboratory. In other words, the PE samples were labeled and identified as if they were typical environmental samples so that the analytical laboratory was unaware when the PE samples were submitted. Results from the PE samples are presented in Section 4 of this report.

# 4

# Section Four

Section 4

# Draft - Section 4
# Data Presentation and Evaluation

Analytical results and selected field measurement data collected during the period June 1995 through October 1996 are provided in this section. The analytical and field measurement data have been organized into several basic groupings:

- Groundwater analytical results for VOCs (Tables 4-1 through 4-10)
- Groundwater analytical results for Nitrates (Table 4-11)
- Groundwater analytical results for Metals and General Minerals (Tables 4-12 through 4-22)
- Quality assurance sample results (Tables 4-23 through 4-27)
- Well survey data (Table 4-28)
- Groundwater elevation data (Table 4-29)
- Aquifer testing results (Tables 4-30 and 4-31)

## 4.1 Water Quality and Groundwater Elevation Results

Water quality results for the MP wells (eight newly-installed MP monitoring wells and one EPA MP monitoring well), and the Network wells (21 water supply wells, four site assessment wells, and the Key Well) are discussed below. Groundwater elevation results for the MP monitoring wells and Network wells are also discussed in this section.

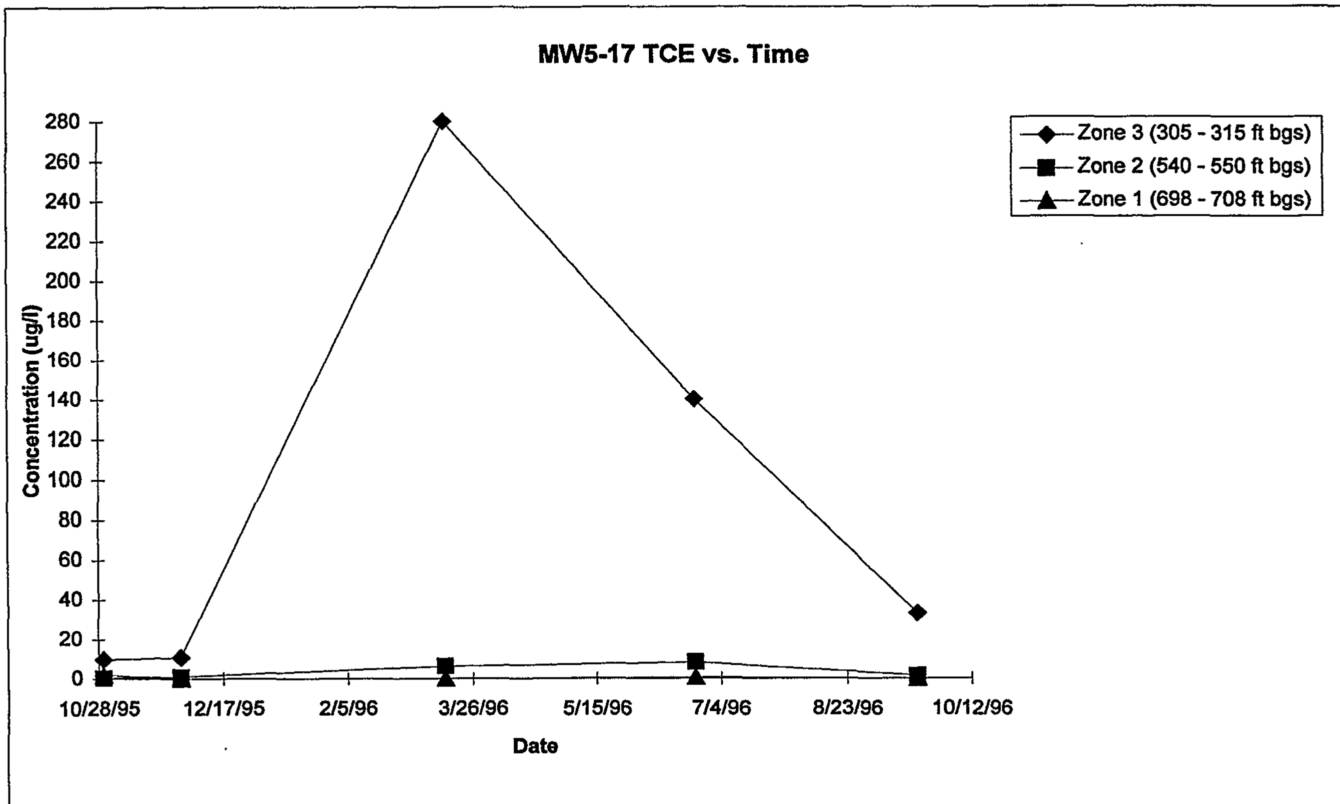
### *4.1.1 Water Quality Results*

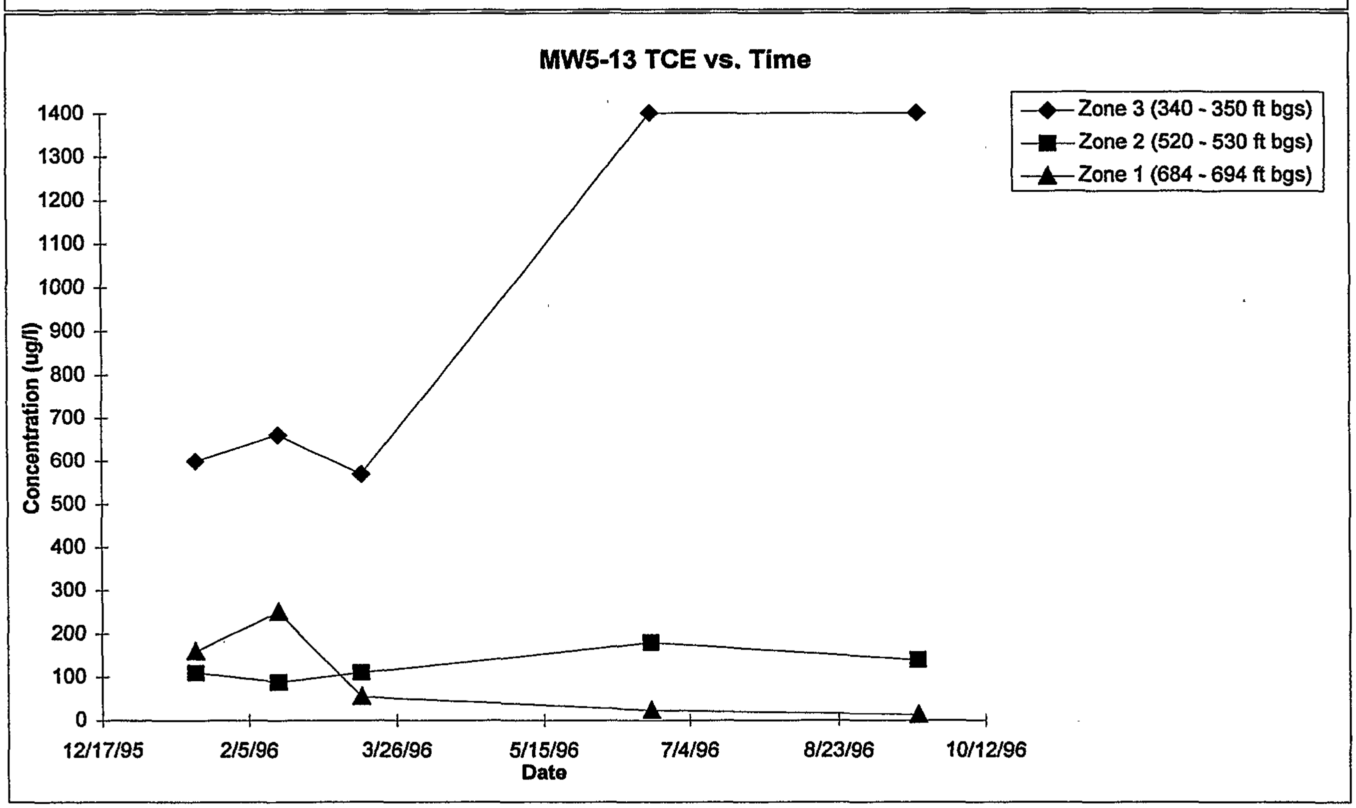
A total of five rounds of water quality samples (i.e., initial, 30-day, and three quarters) were collected from the majority of the MP monitoring wells. Because MW5-08, MW5-15 and MW5-18 were installed towards the end of the project, only two or three rounds of sampling were performed on these wells. Water quality samples were also collected from the majority of Network wells for three quarters (March/April, June/July, and September/October). The following discussion focuses on VOC, nitrate, general mineral water quality results and field quality control sample results. Water quality results are tabulated in Tables 4-1 through 4-21 and Plates 1 through 3. Specifically, the VOC results are found on Tables 4-1 through 4-10 and Plates 1 and 2, the nitrate data is tabulated on Table 4-11 and Plate 3, and the general mineral data are summarized on Tables 4-12 through 4-21. Laboratory data sheets for the quarterly sampling are included in Appendix B. However, the initial and 30-day sampling data sheets are included in the individual well completion reports.

#### *4.1.1.1 Lateral and Vertical Extent of Groundwater VOC Contamination*

The collection of five rounds of water quality data for the MP monitoring wells allows for an evaluation of whether the trends observed during the initial monitoring are persistent or exhibit temporal variation. TCE, PCE, 1,2-DCA and CTC concentrations for the rounds are shown on Plates 1 and 2 next to the respective well location. The maximum contaminant level (MCL) for each constituent is listed on Table 4-1. Graphs showing TCE concentrations versus time for the sampling period are shown on Figures 4-1 through 4-5.

**Figure 4-1**
Baldwin Park Operable Unit Pre-Remedial Design
Groundwater Monitoring Well
TCE Concentration vs. Time
MW5-13 and MW5-17

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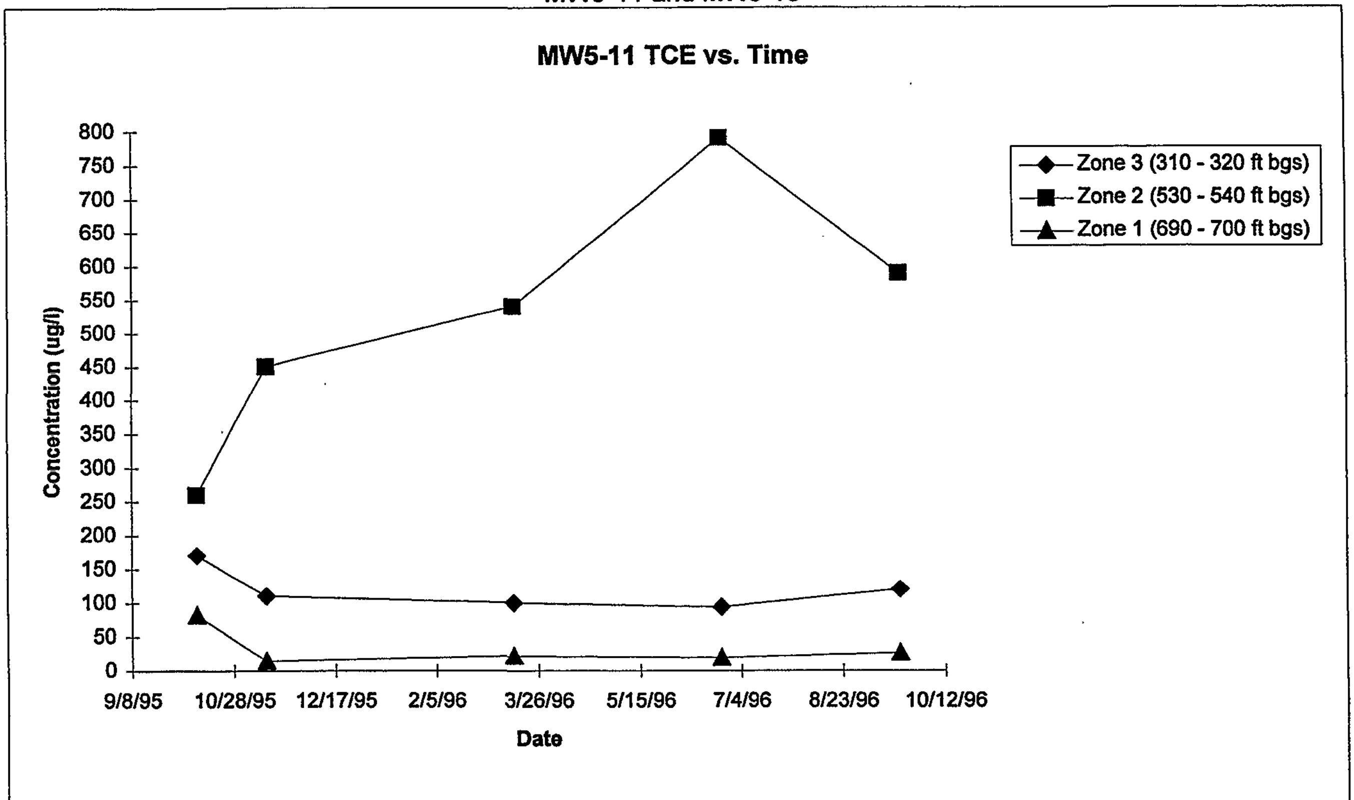
12/12/96

**Figure 4-2**
Baldwin Park Operable Unit Pre-Remedial Design
Groundwater Monitoring Well
TCE Concentration vs. Time
MW5-11 and MW5-18



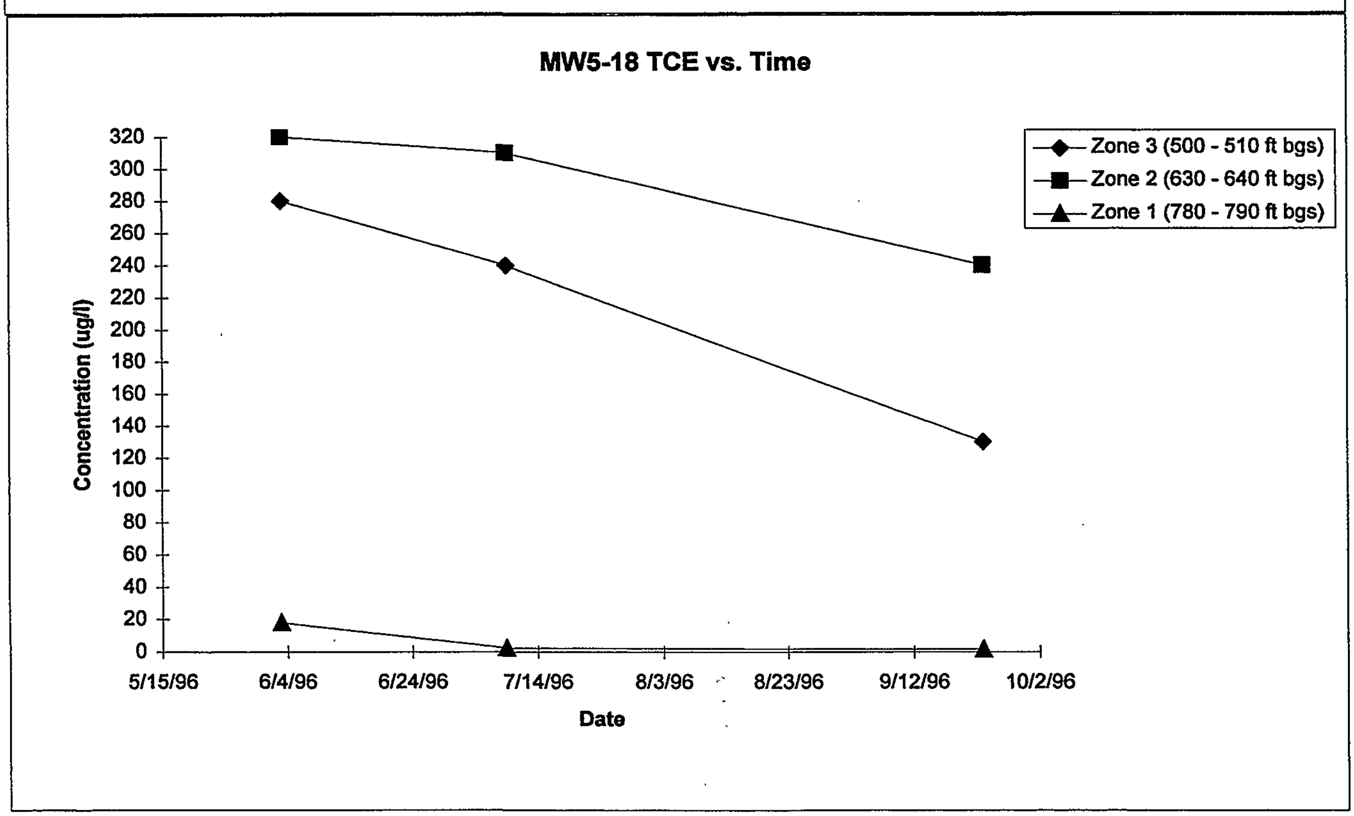




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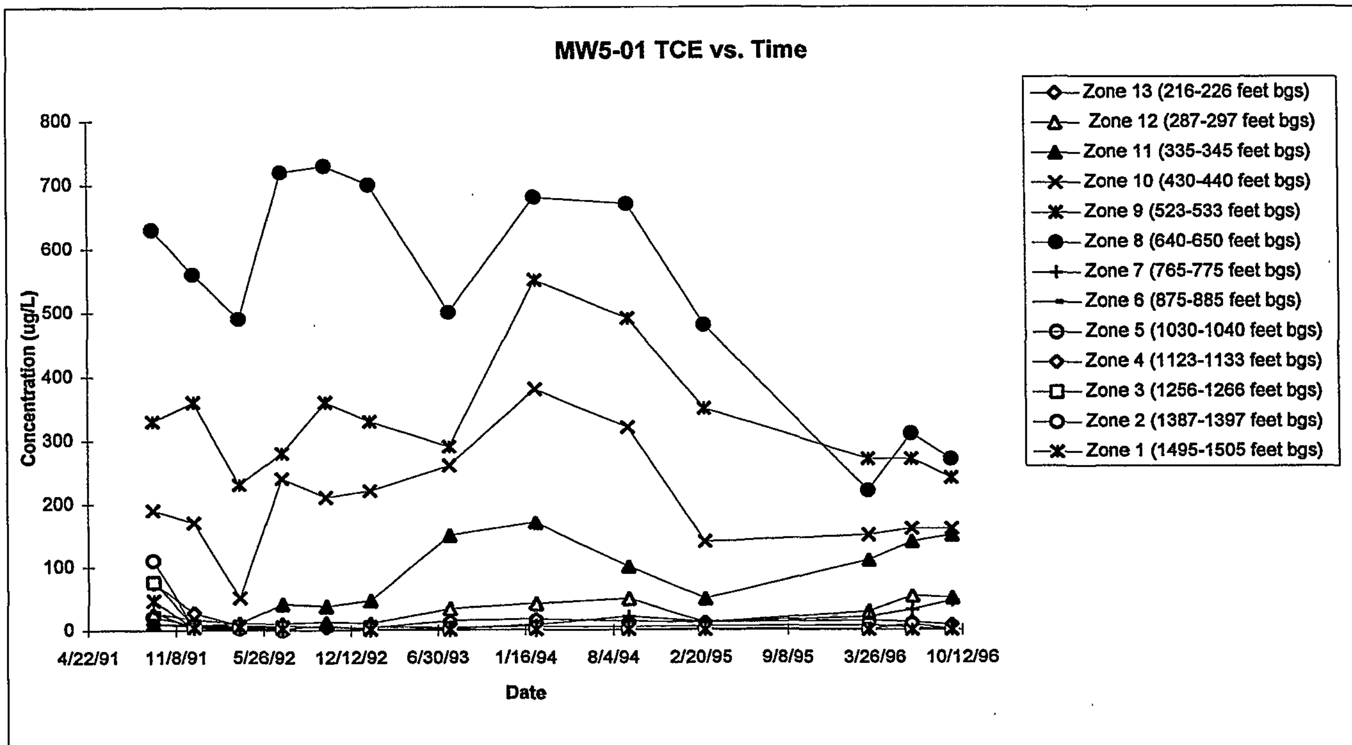
**Figure 4-3**
Baldwin Park Operable Unit Pre-Remediation Design
Groundwater Monitoring Well
TCE Concentration vs. Time
MW5-01 and MW5-03



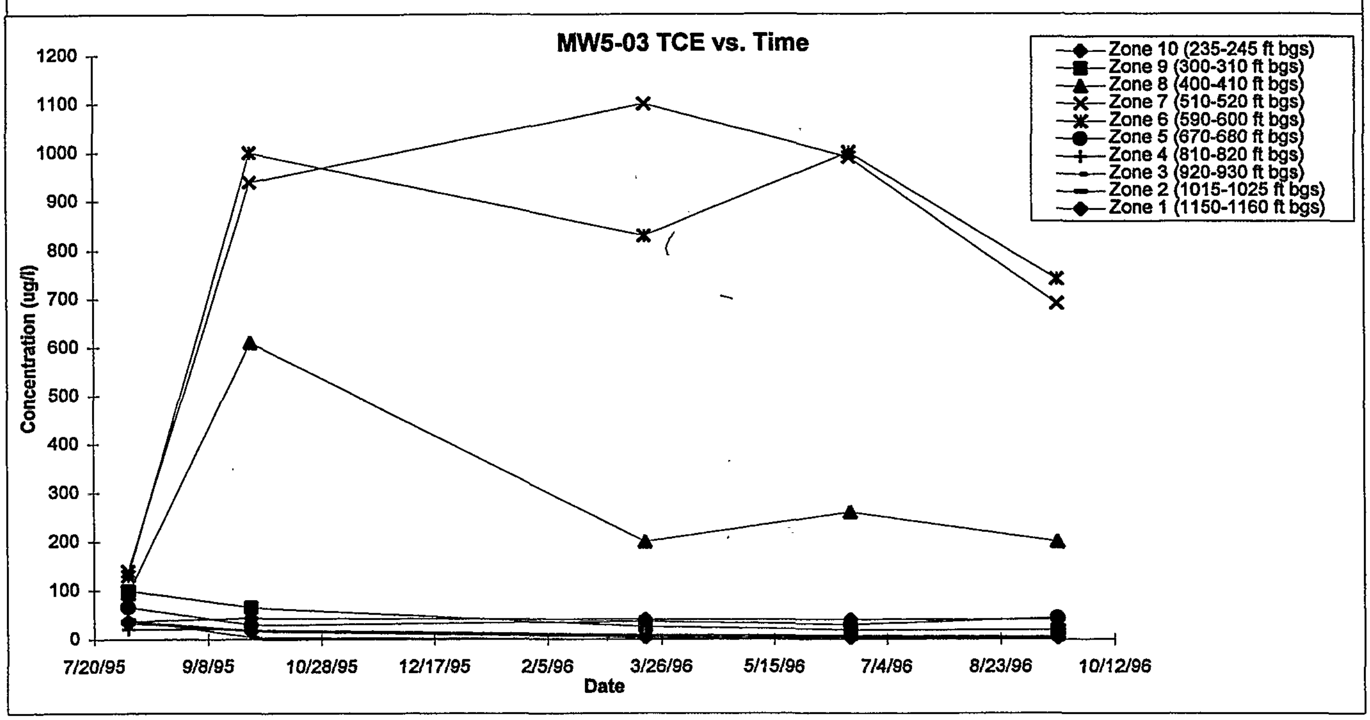
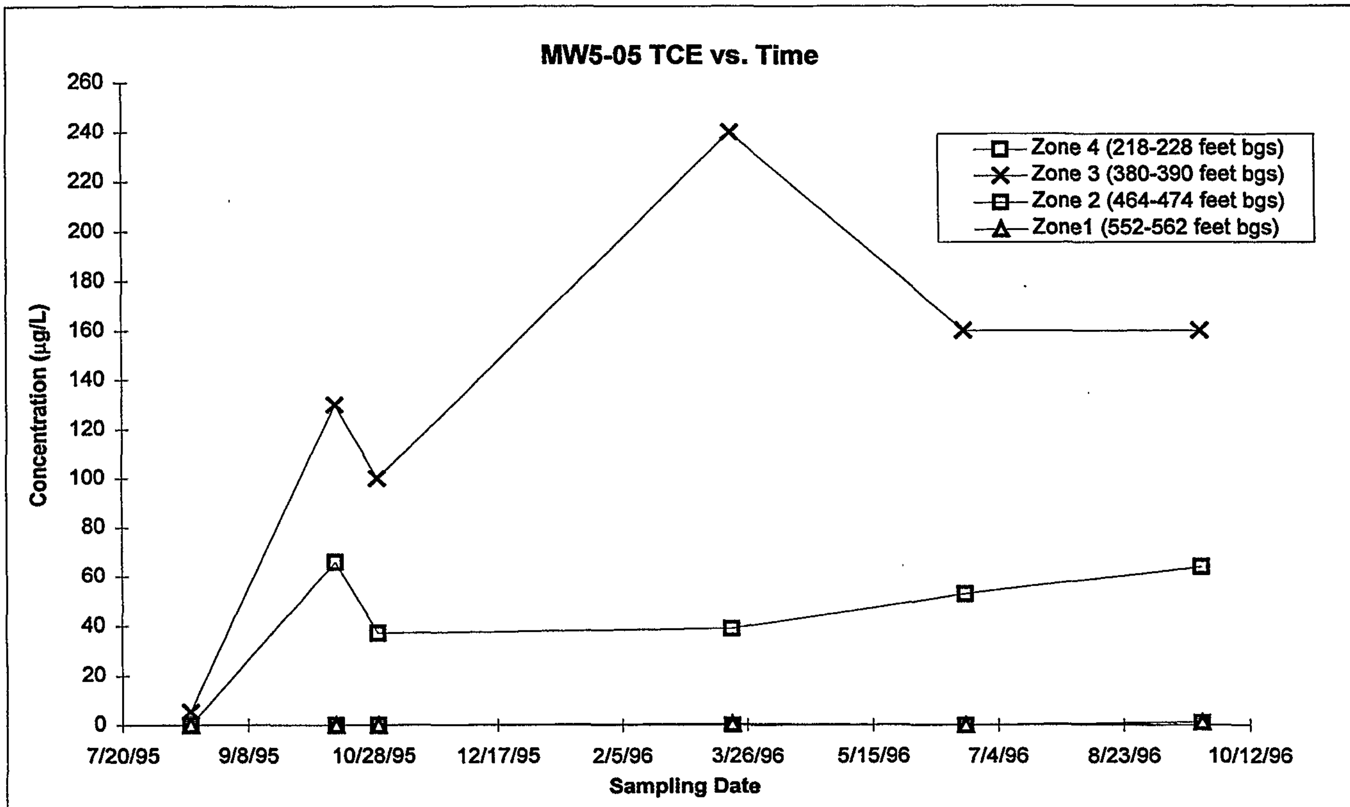



**Figure 4-4**
Baldwin Park Operable Unit Pre-Remedial Design
Groundwater Monitoring Well
TCE Concentrations vs. Time
MW5-05 and MW5-08



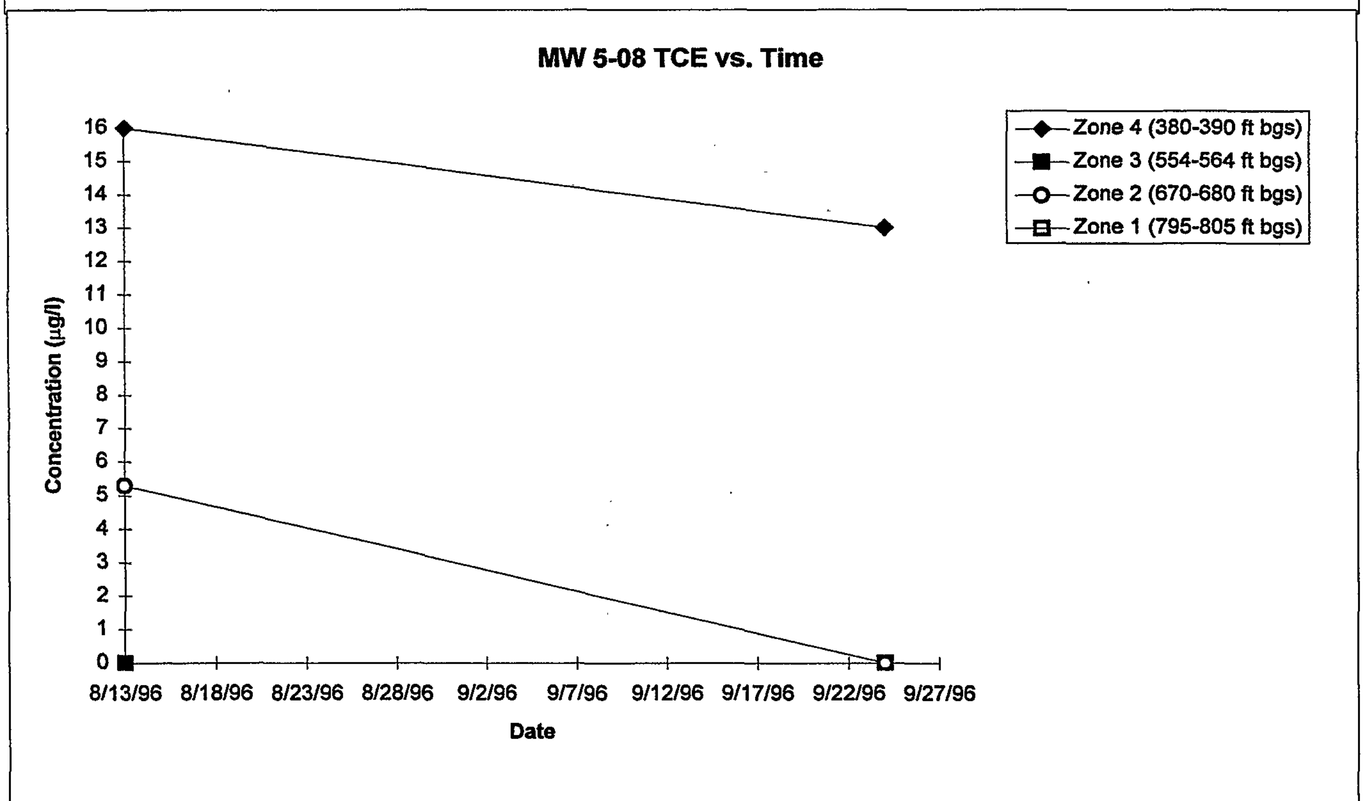




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**Figure 4-5**
Baldwin Park Operable Unit Pre-Remedial Design
Groundwater Monitoring Well
TCE Concentrations vs. Time
MW5-15

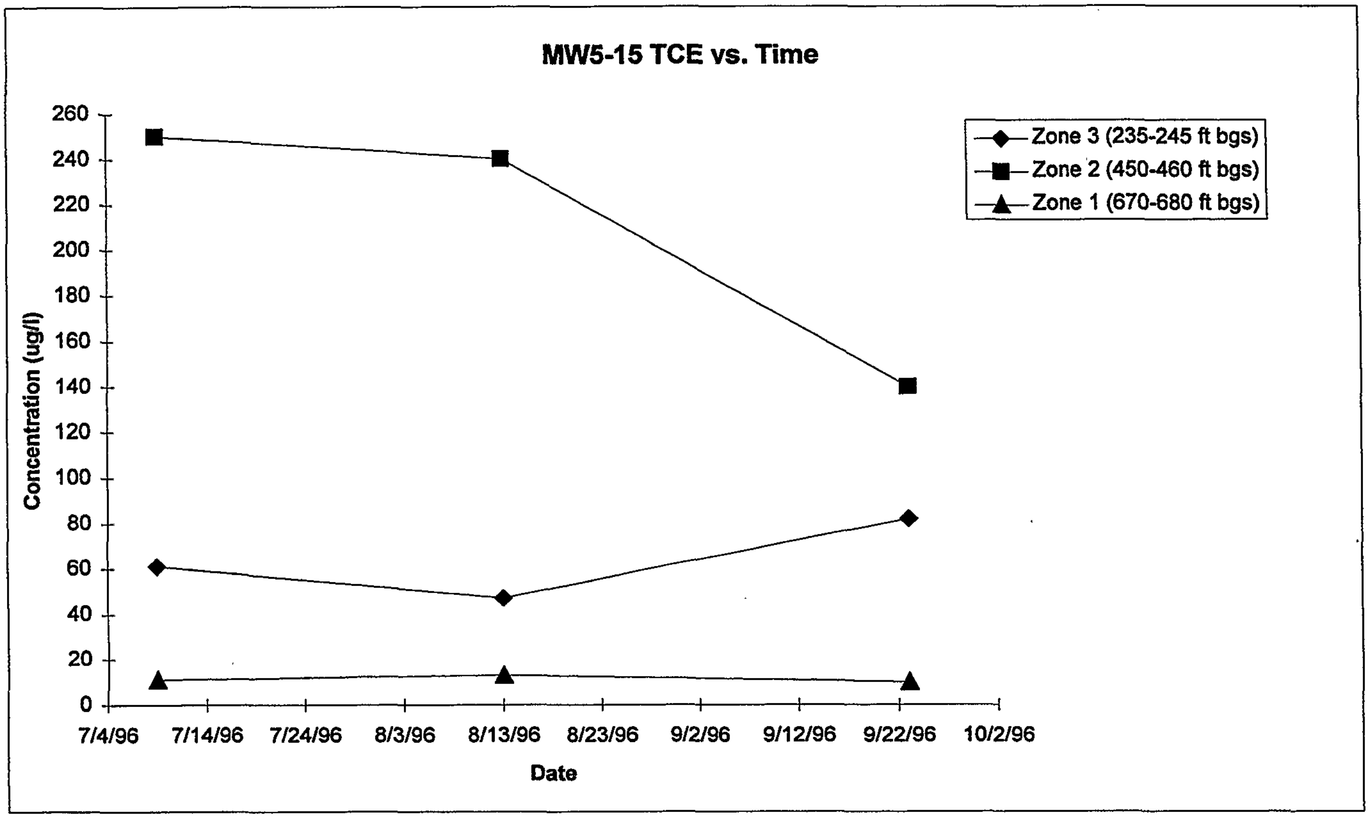

**Table 4-1**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-01

| Well ID | | MW50113 | | | | | MW50112 | | | MW50111 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | 216-226 | | | | | 287-297 | | | 335-345 | | |
| Sample Date | | 13-Mar-96 | 13-Mar-96 | 20-Jun-96 | 19-Sep-96 | 19-Sep-96 | 13-Mar-96 | 20-Jun-96 | 19-Sep-96 | 13-Mar-96 | 20-Jun-96 | 19-Sep-96 |
| Sample Type[1] | | GW | K | GW | GW | K | GW | | | GW | | |
| VOCs[2,3] | MCL[4] | | | | | | | | | | | |
| Benzene | 1 | ND<0.09 | 0.18 | ND<0.09 | ND<0.50 | ND<0.50 | ND<0.09 | 0.090 | ND<0.50 | 0.10 | ND<0.09 | ND<0.50 |
| Bromobenzene | -- | ND<0.13 | ND<0.13 | ND<0.13 | ND<1.0 | ND<1.0 | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.13 | ND<0.13 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.16 | ND<0.16 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.16 | 0.11 | ND<1.0 | ND<0.16 | ND<0.11 | ND<1.0 |
| sec-Butylbenzene | -- | ND<0.11 | 0.24 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.11 | 0.11 | ND<1.0 | 0.21 | 0.13 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.15 | ND<0.15 | 0.46 | ND<1.0 | ND<1.0 | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.15 | ND<0.15 | ND<1.0 |
| Carbon tetrachloride | 0.5 | ND<0.46 | ND<0.46 | ND<0.28 | ND<0.50 | ND<0.50 | ND<0.46 | 0.47 | 0.39J | 1.3 | 1.6 | 1.4 |
| Carbon disulfide | -- | NA | NA | ND<0.17 | ND<5.0 | ND<5.0 | NA | ND<0.17 | ND<5.0 | NA | ND<0.17 | 0.14J |
| Chloroform | 100 b | 0.68 | 0.73 | 0.56 | 0.32J | 0.30J | 3.0 | 3.7 | 3.4 | 7.8 | 8.0 | 9.3 |
| Chloromethane | -- | ND<0.37 | ND<0.37 | ND<0.37 | ND<1.0 | ND<1.0 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | 3.0 |
| Dichlorodifluoromethane | 1000 a | 0.85 | ND<0.40 | 0.79 | 0.23J | 0.26J | 1.6 | 3.3 | 2.3 | 2.1 | 3.2 | 1.5 |
| 1,2-Dichlorobenzene | 600 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 |
| 1,4-Dichlorobenzene | 5 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<1.0 | ND<0.27 | 0.39 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 |
| 1,1-Dichloroethane | 5 | 1.0 | 1.0 | 0.84 | 0.44J | 0.40J | 1.5 | 1.9 | 1.8 | 2.5 | 2.3 | 2.1 |
| 1,2-Dichloroethane | 0.5 | ND<0.22 | ND<0.22 | ND<0.22 | ND<1.0 | ND<1.0 | 1.3 | 1.5 | 0.96J | 3.2 | 3.1 | 2.8 |
| 1,1-Dichloroethene | 6 | 0.90 | 0.95 | 0.62 | 0.17J | 0.19J | 1.1 | 2.3 | 2.4 | 3.3 | 4.6 | 7.9 |
| cis-1,2-Dichloroethene | 6 | 6.5 | 6.0 | 5.1 | 2.6 | 2.4 | 5.1 | 6.1 | 5.9 | 8.8 | 7.9 | 7.8 |
| trans-1,2-Dichloroethene | 10 | ND<0.17 | ND<0.17 | ND<0.17 | ND<1.0 | ND<1.0 | ND<0.17 | ND<0.17 | 0.14J | ND<0.17 | ND<0.17 | ND<1.0 |
| 1,2-Dichloropropane | 5 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<1.0 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<1.0 |
| Ethylbenzene | 700 | ND<0.31 | ND<0.31 | 0.35 | 0.13J | ND<1.0 | ND<0.31 | ND<0.16 | ND<1.0 | ND<0.31 | ND<0.16 | ND<1.0 |
| Isopropylbenzene | -- | ND<0.09 | ND<0.09 | ND<0.09 | NA | NA | ND<0.09 | ND<0.09 | NA | ND<0.09 | 0.13 | NA |
| 4-Isopropyltoluene | -- | ND<0.24 | ND<0.24 | ND<0.18 | ND<1.0 | ND<1.0 | ND<0.24 | ND<0.18 | ND<1.0 | ND<0.24 | ND<0.18 | ND<1.0 |
| Methyl tert butyl ether | 35 a | NA | NA | ND<0.15 | ND<5.0 | ND<5.0 | NA | ND<0.15 | ND<5.0 | NA | ND<0.15 | ND<5.0 |
| Methylene chloride | 40 a | ND<0.29 | ND<0.29 | ND<0.29 | 0.67J | 1.2J | ND<0.29 | ND<0.29 | 0.99J | ND<0.29 | ND<0.29 | 1.3J |
| Naphthalene | -- | ND<0.37 | ND<0.37 | ND<0.37 | ND<1.0 | ND<1.0 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<1.0 |
| Propylbenzene | -- | ND<0.22 | ND<0.22 | ND<0.56 | ND<1.0 | ND<1.0 | ND<0.22 | ND<0.56 | ND<1.0 | ND<0.22 | ND<0.56 | ND<1.0 |
| Styrene | 100 | 0.32 | 0.33 | 0.71 | 0.22J | 0.18J | ND<0.13 | ND<0.11 | ND<1.0 | ND<0.13 | ND<0.11 | ND<1.0 |
| Tetrachloroethene | 5 | 7.8 | 7.7 | 5.0 | 2.6 | 2.8 | 7.7 | 11 | 12 | 18 | 24 | 37 |
| Toluene | 150 | 0.18 | 0.22 | ND<0.13 | ND<1.0 | ND<1.0 | 0.16 | ND<0.13 | ND<1.0 | 0.13 | ND<0.13 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | 0.64 | ND<0.26 | ND<0.26 | ND<1.0 | ND<1.0 | ND<0.26 | 0.33 | ND<1.0 | ND<0.26 | 0.94 | 0.88J |
| Trichloroethene | 5 | 15 | 15 | 12 | 7.8 | 7.9 | 29 | 53 | 50 | 110 | 140 | 150 |
| Trichlorofluoromethane | 150 | ND<0.32 | ND<0.32 | ND<0.32 | ND<1.0 | ND<1.0 | ND<0.32 | ND<0.32 | ND<1.0 | ND<0.32 | ND<0.32 | ND<1.0 |
| 1,2,4-Trimethylbenzene | -- | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 |
| 1,3,5-Trimethylbenzene | -- | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 |
| Vinyl chloride | 0.5 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.50 | ND<0.50 | ND<0.20 | ND<0.20 | ND<0.50 | ND<0.20 | ND<0.20 | ND<0.50 |
| o-Xylene | 1,750 | ND<0.13 | ND<0.13 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.13 | ND<0.11 | ND<1.0 | ND<0.13 | ND<0.11 | ND<1.0 |
| p/m-Xylenes | 1,750 | ND<0.35 | ND<0.35 | ND<0.35 | ND<1.0 | ND<1.0 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.35 | ND<0.35 | ND<1.0 |
| EPA Method 300.0 | | | | | | | | | | | | |
| Nitrate (as N) | 10 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.050 | ND<0.050 | 7.7 | 8.4 | 8.1 | 7.6 | 6.1 | 2.3 |
| Nitrite (as N) | 1 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.050 | ND<0.050 | 0.57 | 0.26 | 0.28 | 3.2 | 3.7 | 6.2 |

*Notes:*

**All VOC concentrations are in µg/l.**
**All concentrations for EPA Method 300.0 are in mg/l.**
[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
N = Equipment decontamination rinsate blank
[2] Only VOCs with detectable concentrations in one or more samples are listed.
[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996.
All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).
[a] California Action Level
[b] Federal MCL
-- No Standard
B = Also detected in laboratory's method blank.
bgs = below ground surface
J = Result is estimated; value lies between the method detection and reporting limits.
ND = Not detected at a concentration greater than the limit indicated.
NA = Not analyzed.

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11/22/96

## Table 4-1
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-01

| Well ID | | MW50110 | | | MW50109 | | | | MW50108 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | 430-440 | | | 523-533 | | | | 640-650 | | |
| Sample Date | | 13-Mar-96 | 20-Jun-96 | 19-Sep-96 | 13-Mar-96 | 20-Jun-96 | 20-Jun-96 | 19-Sep-96 | 13-Mar-96 | 20-Jun-96 | 19-Sep-96 |
| Sample Type[1] | | GW | | | GW | GW | K | GW | GW | | |
| VOCs[2,3] | MCL[4] | | | | | | | | | | |
| Benzene | 1 | ND<0.09 | ND<0.09 | ND<0.50 | 0.095 | ND<0.09 | ND<0.09 | ND<0.50 | ND<0.09 | ND<0.09 | ND<0.50 |
| Bromobenzene | -- | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.13 | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.13 | ND<0.13 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.16 | ND<0.11 | ND<1.0 | ND<0.16 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.16 | ND<0.11 | ND<1.0 |
| sec-Butylbenzene | -- | 0.13 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | 0.12 | ND<0.11 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.15 | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.15 | ND<0.15 | ND<1.0 |
| Carbon tetrachloride | 0.5 | 2.2 | 2.6 | 1.9 | 4.4 | 5.3 | 5.8 | 5.1 | 4.7 | 7.2 | 7.1 |
| Carbon disulfide | -- | NA | ND<0.17 | ND<5.0 | NA | ND<0.17 | ND<0.17 | ND<5.0 | NA | ND<0.17 | ND<5.0 |
| Chloroform | 100 [b] | 8.5 | 9.4 | 8.9 | 12 | 12 | 13 | 16 | 13 | 7.9 | 5.8 |
| Chloromethane | -- | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<1.0 |
| Dichlorodifluoromethane | 1000 [a] | 7.4 | 11 | 5.5 | 7.9 | 11 | 13 | 7.2 | 4.3 | 3.3 | 1.5 |
| 1,2-Dichlorobenzene | 600 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 |
| 1,4-Dichlorobenzene | 5 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 |
| 1,1-Dichloroethane | 5 | 3.4 | 3.7 | 2.9 | 2.6 | 3.1 | 3.6 | 3.1 | 3.0 | 0.94 | 0.59J |
| 1,2-Dichloroethane | 0.5 | 5.8 | 4.6 | 3.9 | 13 | 11 | 12 | 9.5 | 13 | 8.2 | 7.0 |
| 1,1-Dichloroethene | 6 | 0.66 | 0.91 | 0.90J | 1.0 | 1.3 | 1.6 | 1.8 | 1.2 | 0.97 | 0.54J |
| cis-1,2-Dichloroethene | 6 | 10 | 11 | 9.2 | 9.5 | 10 | 11 | 11 | 10 | 5.8 | 3.7 |
| trans-1,2-Dichloroethene | 10 | ND<0.17 | ND<0.17 | 0.22J | ND<0.17 | ND<0.17 | ND<0.17 | 0.26J | ND<0.17 | ND<0.17 | ND<1.0 |
| 1,2-Dichloropropane | 5 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<1.0 |
| Ethylbenzene | 700 | ND<0.31 | ND<0.16 | ND<1.0 | ND<0.31 | ND<0.16 | ND<0.16 | ND<1.0 | ND<0.31 | ND<0.16 | ND<1.0 |
| Isopropylbenzene | -- | ND<0.09 | ND<0.09 | NA | ND<0.09 | ND<0.09 | ND<0.09 | NA | ND<0.09 | ND<0.09 | NA |
| *4-Isopropyltoluene* | -- | *ND<0.24* | *ND<0.18* | *ND<1.0* | *ND<0.24* | *ND<0.18* | *ND<0.18* | *ND<1.0* | *ND<0.24* | *ND<0.18* | *ND<1.0* |
| Methyl tert butyl ether | 35 [a] | NA | ND<0.15 | ND<5.0 | NA | ND<0.15 | ND<0.15 | ND<5.0 | NA | ND<0.15 | ND<5.0 |
| Methylene chloride | 40 [a] | ND<0.29 | 0.40 | 1.7J | 0.67 | 0.45 | 0.51 | 1.5J | 0.65 | ND<0.29 | 0.84J |
| Naphthalene | -- | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<1.0 |
| Propylbenzene | -- | ND<0.22 | ND<0.56 | ND<1.0 | ND<0.22 | ND<0.56 | ND<0.56 | ND<1.0 | ND<0.22 | ND<0.56 | ND<1.0 |
| Styrene | 100 | ND<0.13 | ND<0.11 | ND<1.0 | ND<0.13 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.13 | ND<0.11 | ND<1.0 |
| Tetrachloroethene | 5 | 7.2 | 9.2 | 7.8 | 8.8 | 11 | 13 | 14 | 10 | 6.3 | 4.4 |
| Toluene | 150 | 0.14 | ND<0.13 | ND<1.0 | 0.17 | ND<0.13 | ND<0.13 | ND<1.0 | 0.19 | ND<0.13 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | ND<0.26 | 0.48 | ND<1.0 | ND<0.26 | ND<0.26 | 0.52 | ND<1.0 | ND<0.26 | 0.47 | ND<1.0 |
| Trichloroethene | 5 | 150 | 160 | 160 | 270 | 270 | 310 | 240 | 220 | 310 | 270 |
| Trichlorofluoromethane | 150 | ND<0.32 | ND<0.32 | 0.33J | ND<0.32 | ND<0.32 | ND<0.32 | 0.57J | 0.47 | 0.41 | 0.30J |
| 1,2,4-Trimethylbenzene | -- | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 |
| 1,3,5-Trimethylbenzene | -- | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 |
| Vinyl chloride | 0.5 | ND<0.20 | ND<0.20 | ND<0.50 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.50 | ND<0.20 | ND<0.20 | ND<0.50 |
| o-Xylene | 1,750 | ND<0.13 | ND<0.11 | ND<1.0 | ND<0.13 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.13 | ND<0.11 | ND<1.0 |
| p/m-Xylenes | 1,750 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.35 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.35 | ND<0.35 | ND<1.0 |
| EPA Method 300.0 | | | | | | | | | | | |
| Nitrate (as N) | 10 | 5.6 | 5.6 | 6.0 | 6.2 | 5.9 | 5.9 | 6.4 | 6.2 | 4.8 | 4.9 |
| Nitrite (as N) | 1 | ND<0.25 | ND<0.25 | ND<0.050 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.050 | ND<0.25 | ND<0.25 | ND<0.050 |

*Notes:*

**All VOC concentrations are in µg/l.**

**All concentrations for EPA Method 300.0 are in mg/l.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- N = Equipment decontamination rinsate blank

[2] Only VOCs with detectable concentrations in one or more samples are listed.

[3] *VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996.*

All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).

[a] California Action Level

[b] Federal MCL

-- No Standard

B = Also detected in laboratory's method blank.

bgs = below ground surface

J = Result is estimated; value lies between the method detection and reporting limits.

*ND = Not detected at a concentration greater than the limit indicated.*

NA = Not analyzed.

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11/22/96

**Table 4-1**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-01

| Well ID | | MW50107 | | | MW50106 | | | MW50105 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | 765-775 | | | 875-885 | | | 1030-1040 | | |
| Sample Date | | 13-Mar-96 | 20-Jun-96 | 18-Sep-96 | 12-Mar-96 | 20-Jun-96 | 18-Sep-96 | 12-Mar-96 | 20-Jun-96 | 18-Sep-96 |
| Sample Type[1] | | GW | | | GW | | | GW | | |
| VOCs[2,3] | MCL[4] | | | | | | | | | |
| Benzene | 1 | ND<0.09 | ND<0.09 | ND<0.50 | ND<0.09 | ND<0.09 | ND<0.50 | ND<0.09 | ND<0.09 | ND<0.50 |
| Bromobenzene | -- | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.13 | ND<0.13 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.16 | ND<0.11 | ND<1.0 | ND<0.16 | ND<0.11 | ND<1.0 | ND<0.16 | ND<0.11 | ND<1.0 |
| sec-Butylbenzene | -- | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.15 | ND<0.15 | ND<1.0 |
| Carbon tetrachloride | 0.5 | **8.2** | **9.1** | **13** | **7.0** | **8.7** | **12** | ND<0.46 | ND<0.28 | ND<0.50 |
| Carbon disulfide | -- | NA | ND<0.17 | ND<5.0 | NA | ND<0.17 | ND<5.0 | NA | ND<0.17 | **0.32J** |
| Chloroform | 100[b] | **1.0** | **1.2** | **1.2** | **0.75** | **0.41** | **0.37J** | ND<0.24 | ND<0.24 | ND<1.0 |
| Chloromethane | -- | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<1.0 |
| Dichlorodifluoromethane | 1000[a] | ND<0.40 | ND<0.40 | ND<1.0 | ND<0.40 | ND<0.40 | ND<1.0 | ND<0.40 | ND<0.40 | ND<1.0 |
| 1,2-Dichlorobenzene | 600 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 |
| 1,4-Dichlorobenzene | 5 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 |
| 1,1-Dichloroethane | 5 | ND<0.19 | ND<0.19 | ND<1.0 | ND<0.19 | ND<0.19 | ND<1.0 | ND<0.19 | ND<0.19 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | **1.0** | **1.3** | **1.5** | ND<0.22 | ND<0.22 | ND<0.50 | ND<0.22 | ND<0.22 | ND<0.50 |
| 1,1-Dichloroethene | 6 | ND<0.21 | ND<0.21 | ND<1.0 | ND<0.21 | ND<0.21 | ND<1.0 | ND<0.21 | ND<0.21 | ND<1.0 |
| cis-1,2-Dichloroethene | 6 | ND<0.38 | **0.44** | **0.41J** | ND<0.38 | ND<0.17 | ND<1.0 | ND<0.38 | ND<0.17 | ND<1.0 |
| trans-1,2-Dichloroethene | 10 | ND<0.17 | ND<0.17 | ND<1.0 | ND<0.17 | ND<0.17 | ND<1.0 | ND<0.17 | ND<0.17 | ND<1.0 |
| 1,2-Dichloropropane | 5 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<1.0 |
| Ethylbenzene | 700 | ND<0.31 | ND<0.16 | ND<1.0 | ND<0.31 | ND<0.16 | ND<1.0 | ND<0.31 | ND<0.16 | ND<1.0 |
| Isopropylbenzene | -- | ND<0.09 | ND<0.09 | NA | ND<0.09 | ND<0.09 | NA | ND<0.09 | ND<0.09 | NA |
| 4-Isopropyltoluene | -- | ND<0.24 | ND<0.18 | ND<1.0 | ND<0.24 | ND<0.18 | ND<1.0 | ND<0.24 | ND<0.18 | ND<1.0 |
| Methyl tert butyl ether | 35[a] | NA | ND<0.15 | ND<5.0 | NA | ND<0.15 | ND<5.0 | NA | ND<0.15 | ND<5.0 |
| Methylene chloride | 40[a] | ND<0.29 | ND<0.29 | **0.35J** | ND<0.29 | ND<0.29 | **0.47J** | ND<0.29 | ND<0.29 | ND<2.0 |
| Naphthalene | -- | **0.39** | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<1.0 |
| Propylbenzene | -- | ND<0.22 | ND<0.56 | ND<1.0 | ND<0.22 | ND<0.56 | ND<1.0 | ND<0.22 | ND<0.56 | ND<1.0 |
| Styrene | 100 | ND<0.13 | ND<0.11 | ND<1.0 | ND<0.13 | ND<0.11 | ND<1.0 | ND<0.13 | ND<0.11 | ND<1.0 |
| Tetrachloroethene | 5 | ND<0.29 | ND<0.29 | **0.24J** | ND<0.29 | ND<0.29 | ND<1.0 | ND<0.29 | ND<0.29 | ND<1.0 |
| Toluene | 150 | **0.16** | **0.22** | ND<1.0 | **0.20** | ND<0.13 | ND<1.0 | **0.15** | **0.22** | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | ND<0.26 | ND<0.26 | ND<1.0 | ND<0.26 | ND<0.26 | ND<1.0 | ND<0.26 | ND<0.26 | ND<1.0 |
| Trichloroethene | 5 | **21** | **32** | **46** | ND<0.21 | ND<0.21 | **0.35J** | **0.73** | **0.46** | **0.57J** |
| Trichlorofluoromethane | 150 | ND<0.32 | ND<0.32 | ND<1.0 | ND<0.32 | ND<0.32 | ND<1.0 | ND<0.32 | ND<0.32 | ND<1.0 |
| 1,2,4-Trimethylbenzene | -- | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 |
| 1,3,5-Trimethylbenzene | -- | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 |
| Vinyl chloride | 0.5 | ND<0.20 | ND<0.20 | ND<0.50 | ND<0.20 | ND<0.20 | ND<0.50 | ND<0.20 | ND<0.20 | ND<0.50 |
| o-Xylene | 1,750 | ND<0.13 | ND<0.11 | ND<1.0 | **0.13** | ND<0.11 | ND<1.0 | ND<0.13 | ND<0.11 | ND<1.0 |
| p/m-Xylenes | 1,750 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.35 | ND<0.35 | ND<1.0 |
| **EPA Method 300.0** | | | | | | | | | | |
| Nitrate (as N) | 10 | **2.4** | **2.4** | **2.2** | **1.9** | **2.2** | **2.4** | **0.69** | **0.5** | **0.36** |
| Nitrite (as N) | 1 | ND<0.25 | ND<0.25 | ND<0.050 | ND<0.25 | ND<0.25 | ND<0.050 | ND<0.25 | ND<0.25 | ND<0.050 |

***Notes:***

**All VOC concentrations are in µg/l.**
**All concentrations for EPA Method 300.0 are in mg/l.**
[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
N = Equipment decontamination rinsate blank
[2] Only VOCs with detectable concentrations in one or more samples are listed.
[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996.
*All other samples were analyzed for VOCs using EPA Method 8260.*

[4] California Maximum Contaminant Level (as of 12/95).
[a] California Action Level
[b] Federal MCL
-- No Standard
B = Also detected in laboratory's method blank.
bgs = below ground surface
J = Result is estimated; value lies between the method detection and reporting limits.
ND = Not detected at a concentration greater than the limit indicated.
*NA = Not analyzed.*

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11/22/96

**Table 4-1**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-01

| Well ID | | MW50104 | | | MW50103 | | | MW50102 | | | MW50101 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | 1123-1133 | | | 1256-1266 | | | 1387-1397 | | | 1495-1505 | | |
| Sample Date | | 12-Mar-96 | 19-Jun-96 | 18-Sep-96 | 12-Mar-96 | 19-Jun-96 | 18-Sep-96 | 11-Mar-96 | 19-Jun-96 | 18-Sep-96 | 11-Mar-96 | 19-Jun-96 | 18-Sep-96 |
| Sample Type[1] | | GW | | | GW | | | GW | | | GW | | |
| VOCs[2,3] | MCL[4] | | | | | | | | | | | | |
| Benzene | 1 | ND<0.09 | ND<0.09 | ND<0.50 | 0.21 | ND<0.09 | ND<0.50 | ND<0.09 | 0.65 | ND<0.50 | ND<0.09 | ND<0.09 | ND<0.50 |
| Bromobenzene | -- | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.13 | ND<0.13 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.16 | ND<0.11 | ND<1.0 | ND<0.16 | 0.12 | ND<1.0 | ND<0.16 | ND<0.11 | ND<1.0 | ND<0.16 | ND<0.11 | ND<1.0 |
| sec-Butylbenzene | -- | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | 0.26 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.15 | ND<0.15 | ND<1.0 |
| Carbon tetrachloride | 0.5 | ND<0.46 | ND<0.28 | ND<0.50 | ND<0.46 | ND<0.28 | ND<0.50 | ND<0.46 | ND<0.28 | ND<0.50 | ND<0.46 | ND<0.28 | ND<0.50 |
| Carbon disulfide | -- | NA | ND<0.17 | ND<5.0 | NA | ND<0.17 | 0.15J | NA | ND<0.17 | ND<5.0 | NA | ND<0.17 | ND<5.0 |
| Chloroform | 100 [b] | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<1.0 |
| Chloromethane | -- | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<1.0 |
| Dichlorodifluoromethane | 1000 [a] | ND<0.40 | ND<0.40 | ND<1.0 | ND<0.40 | ND<0.40 | 0.27J | ND<0.40 | ND<0.40 | ND<1.0 | ND<0.40 | ND<0.40 | ND<1.0 |
| 1,2-Dichlorobenzene | 600 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 |
| 1,4-Dichlorobenzene | 5 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | 0.11J |
| 1,1-Dichloroethane | 5 | ND<0.19 | ND<0.19 | ND<1.0 | ND<0.19 | ND<0.19 | ND<1.0 | ND<0.19 | 1.1 | ND<1.0 | ND<0.19 | ND<0.19 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | ND<0.22 | ND<0.22 | ND<1.0 | 0.85 | ND<0.22 | ND<1.0 | ND<0.22 | 3.4 | ND<1.0 | ND<0.22 | ND<0.22 | ND<1.0 |
| 1,1-Dichloroethene | 6 | ND<0.21 | ND<0.21 | ND<1.0 | ND<0.21 | ND<0.21 | ND<1.0 | ND<0.21 | ND<0.21 | ND<1.0 | ND<0.21 | ND<0.21 | ND<1.0 |
| cis-1,2-Dichloroethene | 6 | ND<0.38 | ND<0.17 | ND<1.0 | ND<0.38 | ND<0.17 | ND<1.0 | ND<0.38 | 0.98 | ND<1.0 | ND<0.38 | ND<0.17 | ND<1.0 |
| trans-1,2-Dichloroethene | 10 | ND<0.17 | ND<0.17 | ND<1.0 | ND<0.17 | ND<0.17 | ND<1.0 | ND<0.17 | ND<0.17 | ND<1.0 | ND<0.17 | ND<0.17 | ND<1.0 |
| 1,2-Dichloropropane | 5 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<1.0 |
| Ethylbenzene | 700 | ND<0.31 | ND<0.16 | ND<1.0 | 2.5 | 0.99 | ND<1.0 | ND<0.31 | 5.2 | ND<1.0 | ND<0.31 | ND<0.16 | ND<1.0 |
| Isopropylbenzene | -- | ND<0.09 | ND<0.09 | NA | 0.39 | 0.23 | NA | ND<0.09 | ND<0.09 | NA | ND<0.09 | ND<0.09 | NA |
| 4-Isopropyltoluene | -- | ND<0.24 | ND<0.18 | ND<1.0 | ND<0.24 | ND<0.18 | ND<1.0 | ND<0.24 | ND<0.18 | ND<1.0 | ND<0.24 | ND<0.18 | ND<1.0 |
| Methyl tert butyl ether | 35 [a] | NA | ND<0.15 | ND<5.0 | NA | ND<0.15 | 0.54J | NA | 0.79 | ND<5.0 | NA | ND<0.15 | ND<5.0 |
| Methylene chloride | 40 [a] | ND<0.29 | ND<0.29 | 0.63J | ND<0.29 | ND<0.29 | ND<2.0 | ND<0.29 | ND<0.29 | ND<2.0 | ND<0.29 | ND<0.29 | ND<2.0 |
| Naphthalene | -- | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<1.0 |
| Propylbenzene | -- | ND<0.22 | ND<0.56 | ND<1.0 | 0.85 | ND<0.56 | ND<1.0 | ND<0.22 | ND<0.56 | ND<1.0 | ND<0.22 | ND<0.56 | ND<1.0 |
| Styrene | 100 | ND<0.13 | 0.13 | ND<1.0 | 1.6 | 0.87 | ND<1.0 | 0.22 | 2.5 | ND<1.0 | 0.17 | 0.14 | ND<1.0 |
| Tetrachloroethene | 5 | ND<0.29 | ND<0.29 | ND<1.0 | ND<0.29 | ND<0.29 | ND<1.0 | ND<0.29 | ND<0.29 | 0.26J | ND<0.29 | ND<0.29 | ND<1.0 |
| Toluene | 150 | 0.29 | ND<0.13 | ND<1.0 | 1.1 | 0.46 | ND<1.0 | 0.15 | 2.0 | ND<1.0 | ND<0.13 | ND<0.13 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | ND<0.26 | ND<0.26 | ND<1.0 | ND<0.26 | ND<0.26 | ND<1.0 | ND<0.26 | ND<0.26 | ND<1.0 | ND<0.26 | ND<0.26 | ND<1.0 |
| Trichloroethene | 5 | 0.62 | 0.39 | 0.79J | 7.3 | 3.2 | 0.44J | 0.75 | 9.2 | 0.65J | ND<0.21 | ND<0.21 | 0.15J |
| Trichlorofluoromethane | 150 | ND<0.32 | ND<0.32 | ND<1.0 | ND<0.32 | ND<0.32 | ND<1.0 | ND<0.32 | ND<0.32 | ND<1.0 | ND<0.32 | ND<0.32 | ND<1.0 |
| 1,2,4-Trimethylbenzene | -- | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | 0.40 | ND<1.0 | ND<0.11 | 0.55 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 |
| 1,3,5-Trimethylbenzene | -- | ND<0.11 | ND<0.11 | ND<1.0 | 0.57 | 0.52 | ND<1.0 | ND<0.11 | 0.16 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 |
| Vinyl chloride | 0.5 | ND<0.20 | ND<0.20 | ND<0.50 | ND<0.20 | ND<0.20 | ND<0.50 | ND<0.20 | 3.2 | ND<0.50 | ND<0.20 | ND<0.20 | ND<0.50 |
| o-Xylene | 1,750 | ND<0.13 | ND<0.11 | ND<1.0 | 1.9 | 0.76 | ND<1.0 | ND<0.13 | 0.58 | ND<1.0 | ND<0.13 | ND<0.11 | ND<1.0 |
| p/m-Xylenes | 1,750 | ND<0.35 | ND<0.35 | ND<1.0 | 2.1 | 0.90 | ND<1.0 | ND<0.35 | 0.95 | ND<1.0 | ND<0.35 | ND<0.35 | ND<1.0 |
| EPA Method 300.0 | | | | | | | | | | | | | |
| Nitrate (as N) | 10 | ND<0.25 | ND<0.25 | 0.06 | 0.39 | ND<0.25 | ND<0.050 | 0.31 | ND<0.25 | 0.11 | 0.37 | ND<0.25 | 0.056 |
| Nitrite (as N) | 1 | ND<0.25 | ND<0.25 | ND<0.050 | ND<0.25 | ND<0.25 | ND<0.050 | ND<0.25 | ND<0.25 | ND<0.050 | ND<0.25 | ND<0.25 | ND<0.050 |

*Notes:*

**All VOC concentrations are in µg/l.**
**All concentrations for EPA Method 300.0 are in mg/l.**
[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
N = Equipment decontamination rinsate blank
[2] Only VOCs with detectable concentrations in one or more samples are listed.
[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996.
All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).
[a] California Action Level
[b] Federal MCL
-- No Standard
B = Also detected in laboratory's method blank.
bgs = below ground surface
J = Result is estimated; value lies between the method detection and reporting limits.
ND = Not detected at a concentration greater than the limit indicated.
NA = Not analyzed.

## Table 4-1
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-01

| Well ID | | QC Samples | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | MW50102 | MW50106 | MW50113 | MW50104 | MW50109 | MW50104 | MW50111 |
| Sample Depth (feet bgs) | | -- | | | | | | |
| Sample Date | | 11-Mar-96 | 12-Mar-96 | 13-Mar-96 | 19-Jun-96 | 20-Jun-96 | 18-Sep-96 | 19-Sep-96 |
| Sample Type[1] | | N | | | | | | |
| VOCs[2,3] | MCL[4] | | | | | | | |
| Benzene | 1 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.50 | ND<0.50 |
| Bromobenzene | -- | ND<0.13 | ND<0.13 | ND<0.13 | ND<0.13 | ND<0.13 | ND<1.0 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.16 | ND<0.16 | ND<0.16 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 |
| sec-Butylbenzene | -- | ND<0.11 | ND<0.11 | 0.26 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.15 | ND<0.15 | 0.63 | ND<0.15 | ND<0.15 | ND<1.0 | ND<1.0 |
| Carbon tetrachloride | 0.5 | ND<0.46 | ND<0.46 | ND<0.46 | ND<0.28 | ND<0.28 | ND<0.50 | ND<0.50 |
| Carbon disulfide | -- | NA | NA | NA | ND<0.17 | ND<0.17 | ND<5.0 | ND<5.0 |
| Chloroform | 100 [b] | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<1.0 |
| Chloromethane | -- | ND<0.37 | ND<0.37 | ND<0.37 | ND<0.37 | ND<0.37 | ND<1.0 | ND<1.0 |
| Dichlorodifluoromethane | 1000 [a] | ND<0.40 | ND<0.40 | ND<0.40 | ND<0.40 | ND<0.40 | ND<1.0 | ND<1.0 |
| 1,2-Dichlorobenzene | 600 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<1.0 |
| 1,4-Dichlorobenzene | 5 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<1.0 |
| 1,1-Dichloroethane | 5 | ND<0.19 | ND<0.19 | ND<0.19 | ND<0.19 | ND<0.19 | ND<1.0 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | ND<0.22 | ND<0.22 | ND<0.22 | ND<0.22 | ND<0.22 | ND<0.50 | ND<0.50 |
| 1,1-Dichloroethene | 6 | ND<0.21 | ND<0.21 | ND<0.21 | ND<0.21 | ND<0.21 | ND<1.0 | ND<1.0 |
| cis-1,2-Dichloroethene | 6 | ND<0.38 | ND<0.38 | ND<0.38 | ND<0.17 | ND<0.17 | ND<1.0 | ND<1.0 |
| trans-1,2-Dichloroethene | 10 | ND<0.17 | ND<0.17 | ND<0.17 | ND<0.17 | ND<0.17 | ND<1.0 | ND<1.0 |
| 1,2-Dichloropropane | 5 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<1.0 |
| Ethylbenzene | 700 | ND<0.31 | ND<0.31 | ND<0.31 | ND<0.16 | ND<0.16 | ND<1.0 | ND<1.0 |
| Isopropylbenzene | -- | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.09 | NA | NA |
| 4-Isopropyltoluene | -- | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.18 | ND<0.18 | ND<1.0 | ND<1.0 |
| Methyl tert butyl ether | 35 [a] | NA | NA | NA | ND<0.15 | ND<0.15 | ND<5.0 | ND<5.0 |
| Methylene chloride | 40 [a] | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.29 | 0.35J | 1.4J |
| Naphthalene | -- | ND<0.37 | ND<0.37 | ND<0.37 | ND<0.37 | ND<0.37 | ND<1.0 | ND<1.0 |
| Propylbenzene | -- | ND<0.22 | ND<0.22 | ND<0.22 | ND<0.56 | ND<0.56 | ND<1.0 | ND<1.0 |
| Styrene | 100 | ND<0.13 | ND<0.13 | ND<0.13 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 |
| Tetrachloroethene | 5 | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.29 | ND<1.0 | ND<1.0 |
| Toluene | 150 | ND<0.13 | 0.18 | 0.18 | ND<0.13 | ND<0.13 | ND<1.0 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | ND<0.26 | ND<0.26 | ND<0.26 | ND<0.26 | ND<0.26 | ND<1.0 | ND<1.0 |
| Trichloroethene | 5 | ND<0.21 | ND<0.21 | ND<0.21 | ND<0.21 | ND<0.21 | ND<1.0 | 0.60J |
| Trichlorofluoromethane | 150 | ND<0.32 | ND<0.32 | ND<0.32 | ND<0.32 | ND<0.32 | ND<1.0 | ND<1.0 |
| 1,2,4-Trimethylbenzene | -- | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 |
| 1,3,5-Trimethylbenzene | -- | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 |
| Vinyl chloride | 0.5 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.05 | ND<0.05 |
| o-Xylene | 1,750 | ND<0.13 | 0.16 | ND<0.13 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 |
| p/m-Xylenes | 1,750 | ND<0.35 | ND<0.35 | ND<0.35 | ND<0.35 | ND<0.35 | ND<1.0 | ND<1.0 |
| EPA Method 300.0 | | | | | | | | |
| Nitrate (as N) | 10 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.050 | ND<0.050 |
| Nitrite (as N) | 1 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.050 | ND<0.050 |

***Notes:***

**All VOC concentrations are in µg/l.**

**All concentrations for EPA Method 300.0 are in mg/l.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- N = Equipment decontamination rinsate blank

[2] Only VOCs with detectable concentrations in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996. All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).

[a] California Action Level

[b] Federal MCL

-- No Standard

B = Also detected in laboratory's method blank.

bgs = below ground surface

J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than the limit indicated.

NA = Not analyzed.

**Table 4-2**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-03

| Well ID | | MW50310 | | | | | | | | | | MW50309 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Depth (feet bgs)** | | 235-245 | | | | | | | | | | 300-310 | | | | |
| Sample Date | | 4-Aug-95 | 4-Aug-95 | 27-Sep-95 | 27-Sep-95 | 19-Mar-96 | 19-Mar-96 | 18-Jun-96 | 18-Jun-96 | 17-Sep-96 | 17-Sep-96 | 4-Aug-95 | 27-Sep-95 | 19-Mar-96 | 18-Jun-96 | 17-Sep-96 |
| Sample Type[1] | | GW | K | GW | K | GW | K | GW | K | GW | K | GW | | | | |
| VOCs[2,3] | MCL[4] | | | | | | | | | | | | | | | |
| Benzene | 1 | ND<0.33 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.50 | ND<0.50 | ND<1.0 | ND<0.20 | 0.39 | 0.25 | ND<0.50 |
| Bromobenzene | -- | 0.47 | 0.17 | ND<0.15 | ND<0.15 | ND<0.13 | ND<0.13 | ND<0.13 | ND<0.13 | ND<1.0 | ND<1.0 | ND<0.75 | ND<0.15 | ND<0.13 | ND<0.13 | ND<1.0 |
| Bromoform | 100 b | ND<0.23 | ND<0.14 | ND<0.14 | ND<0.14 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<1.0 | ND<1.0 | ND<0.70 | ND<0.14 | ND<0.25 | ND<0.25 | ND<1.0 |
| sec-Butylbenzene | -- | ND<0.33 | ND<0.33 | ND<0.26 | ND<0.26 | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.33 | ND<0.26 | ND<0.11 | 0.16 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.30 | ND<0.30 | ND<0.24 | ND<0.24 | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.15 | ND<1.0 | ND<1.0 | ND<0.30 | ND<0.24 | 0.68 | 0.71 | ND<1.0 |
| *n-Butylbenzene* | -- | *ND<0.25* | *ND<0.15* | *ND<0.15* | *ND<0.15* | *ND<0.16* | *ND<0.16* | *ND<0.11* | *ND<0.11* | *ND<1.0* | *ND<1.0* | *ND<0.75* | *ND<0.15* | *ND<0.16* | *ND<0.11* | *ND<1.0* |
| Carbon disulfide | -- | NA | NA | NA | NA | NA | NA | ND<0.17 | ND<0.17 | ND<5.0 | ND<5.0 | NA | NA | NA | ND<0.17 | ND<5.0 |
| Carbon tetrachloride | 0.5 | ND<1.1 | ND<0.64 | ND<0.64 | ND<0.64 | ND<0.46 | ND<0.46 | ND<0.28 | ND<0.28 | ND<0.50 | ND<0.50 | ND<3.2 | 1.3 | ND<0.46 | ND<0.28 | ND<0.50 |
| Chlorobenzene | 70 | ND<0.38 | ND<0.38 | ND<0.30 | ND<0.30 | ND<0.47 | ND<0.47 | ND<0.14 | ND<0.14 | ND<1.0 | ND<1.0 | ND<0.38 | ND<0.30 | 3.1 | 1.6 | 0.64J |
| Chloroethane | -- | ND<0.59 | ND<0.59 | ND<0.47 | ND<0.47 | ND<0.24 | ND<0.24 | 0.47 | ND<0.24 | ND<1.0 | ND<1.0 | ND<0.59 | ND<0.47 | ND<0.24 | ND<0.24 | ND<1.0 |
| Chloroform | 100 b | 1.4 | 2.2 | 3.5 | 2.4 | 2.7 | 3.1 | 1.8 | 1.7 | 1.6 | 1.1 | ND<1.0 | 1.6 | 0.89 | 0.51 | 0.58J |
| 1,2-Dichlorobenzene | 600 | ND<0.43 | ND<0.26 | ND<0.26 | ND<0.26 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<1.0 | ND<1.3 | 0.32 | 2.2 | 2.1 | 1.2 |
| 1,3-Dichlorobenzene | 130 a | ND<0.45 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.18 | ND<0.18 | ND<0.18 | ND<0.18 | ND<1.0 | ND<1.0 | ND<1.4 | ND<0.27 | ND<0.18 | 0.30 | 0.14J |
| 1,4-Dichlorobenzene | 5 | ND<0.45 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<1.0 | ND<1.4 | ND<0.27 | 17 | 16 | 9.0 |
| 1,1-Dichloroethane | 5 | 13 | 19 | 17 | 10 | 18 | 19 | 17 | 16 | 15 | 8.6 | ND<1.6 | 3.7 | 12 | 6.1 | 2.1 |
| 1,2-Dichloroethane | 0.5 | ND<0.23 | ND<0.14 | 0.53 | 0.44 | 0.55 | 0.58 | 0.43 | 0.42 | 0.33J | 0.34J | ND<0.70 | 0.52 | ND<0.22 | 0.33 | 0.32J |
| 1,1-Dichloroethene | 6 | 29 | 44 | 39 | 17 | 29 | 35 | 43 | 33 | 39 | 14 | 30 | 21 | 32 | 19 | 5.4 |
| cis-1,2-Dichloroethene | 6 | 29 | 37 | 29 | 20 | 31 | 34 | 38 | 35 | 28 | 18 | 7.8 | 10 | 20 | 11 | 4.8 |
| trans-1,2-Dichloroethene | 10 | ND<0.61 | ND<0.61 | ND<0.49 | ND<0.49 | ND<0.17 | ND<0.17 | 0.35 | 0.30 | 0.34J | 0.17J | ND<0.61 | ND<0.49 | ND<0.17 | ND<0.17 | ND<1.0 |
| 1,2-Dichloropropane | 5 | ND<0.40 | ND<0.24 | 1.3 | 0.77 | ND<0.24 | ND<0.24 | 0.32 | 0.29 | 0.31J | 0.21J | ND<1.2 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 |
| Dichlorodifluoromethane | 1000 a | ND<0.60 | ND<0.36 | ND<0.36 | ND<0.36 | ND<0.40 | ND<0.40 | 0.45 | 0.55 | 0.32J | ND<1.0 | ND<1.8 | ND<0.36 | ND<0.40 | ND<0.40 | ND<1.0 |
| Ethylbenzene | 700 | ND<0.35 | ND<0.21 | ND<0.21 | ND<0.21 | ND<0.31 | ND<0.31 | ND<0.16 | ND<0.16 | ND<1.0 | ND<1.0 | ND<1.1 | ND<0.21 | ND<0.31 | ND<0.16 | ND<1.0 |
| Isopropylbenzene | -- | ND<0.29 | ND<0.29 | ND<0.33 | ND<0.33 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.09 | NA | NA | ND<0.29 | ND<0.33 | 0.13 | ND<0.09 | NA |
| 4-Isopropyltoluene | -- | ND<0.28 | ND<0.17 | ND<0.17 | ND<0.17 | ND<0.24 | ND<0.24 | ND<0.18 | ND<0.18 | ND<1.0 | ND<1.0 | ND<0.85 | ND<0.17 | ND<0.24 | ND<0.18 | ND<1.0 |
| Methylene chloride | 40 a | ND<0.77 | ND<0.46 | 0.73 | 0.94 | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.29 | ND<2.0 | ND<2.0 | ND<2.3 | 1.1 | ND<0.29 | ND<0.29 | ND<2.0 |
| Methyl tert butyl ether (MTBE) | 35 a | NA | NA | NA | NA | NA | NA | ND<0.15 | ND<0.15 | ND<5.0 | ND<5.0 | NA | NA | NA | ND<0.15 | ND<5.0 |
| Naphthalene | -- | 1.4B | 0.87B | ND<0.29 | ND<0.29 | ND<0.37 | ND<0.37 | ND<0.37 | ND<0.37 | ND<1.0 | ND<1.0 | ND<1.5 | ND<0.29 | 0.45 | ND<0.37 | ND<1.0 |
| Styrene | 100 | ND<0.41 | ND<0.41 | ND<0.33 | ND<0.33 | ND<0.13 | ND<0.13 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.41 | ND<0.33 | 0.16 | ND<0.11 | ND<1.0 |
| Tetrachloroethene | 5 | 22 | 30 | 24 | 12 | 22 | 24 | 15 | 13 | 14 | 6.4 | 120 | 62 | 16 | 12 | 11 |
| Toluene | 150 | 0.71 | 0.44 | ND<0.22 | ND<0.22 | ND<0.13 | ND<0.13 | ND<0.13 | ND<0.13 | ND<1.0 | ND<1.0 | ND<1.1 | ND<0.22 | 0.17 | 0.14 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | 1.2 | 2.2 | 2.4 | 1.2 | 1.8 | 1.9 | 1.0 | 0.87 | 0.86J | 0.37J | 4.8 | 4.0 | 1.3 | 0.91 | 0.37J |
| Trichloroethene | 5 | 37 | 43 | 43 | 30 | 41 | 42 | 40 | 35 | 41 | 21 | 100 | 65 | 26 | 19 | 19 |
| Trichlorofluoromethane | 150 | ND<0.80 | ND<0.48 | ND<0.48 | ND<0.48 | 0.40 | 0.45 | 0.32 | ND<0.32 | 0.35J | ND<1.0 | ND<2.4 | 1.9 | 0.33 | 0.89 | ND<1.0 |
| 1,2,4-Trimethylbenzene | -- | ND<0.33 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 | ND<1.0 | ND<0.20 | ND<0.11 | ND<0.11 | ND<1.0 |
| Vinyl chloride | 0.5 | ND<0.80 | 0.52 | ND<0.48 | ND<0.48 | ND<0.20 | ND<0.20 | 0.27 | 0.24 | 0.35J | ND<0.50 | ND<2.4 | ND<0.48 | 2.2 | 1.2 | 0.28J |
| o-Xylene | 1,750 | ND<0.41 | ND<0.41 | ND<0.33 | ND<0.33 | ND<0.13 | ND<0.13 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.41 | ND<0.33 | ND<0.13 | ND<0.11 | ND<1.0 |
| p/m-Xylenes | 1,750 | ND<0.55 | ND<0.55 | ND<0.44 | ND<0.44 | ND<0.35 | ND<0.35 | ND<0.35 | ND<0.35 | ND<1.0 | ND,1.0 | ND<0.55 | ND<0.44 | ND<0.35 | ND<0.35 | ND<1.0 |

***Notes:***

**All VOC concentrations are in µg/l.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- N = Equipment decontamination rinsate blank

[2] Only VOCs with detectable concentrations in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996. All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).

[a] California Action Level

[b] Federal MCL

-- No Standard

B = Also detected in laboratory's method blank.

bgs = below ground surface

J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than the limit indicated.

NA = Not analyzed.

Table 4-2
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-03

| Well ID | | MW50308 | | | | | MW50307 | | | | | MW50306 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | 400-410 | | | | | 510-520 | | | | | 590-600 | | | | |
| Sample Date | | 4-Aug-95 | 26-Sep-95 | 19-Mar-96 | 18-Jun-96 | 17-Sep-96 | 4-Aug-95 | 26-Sep-95 | 19-Mar-96 | 18-Jun-96 | 17-Sep-96 | 4-Aug-95 | 26-Sep-95 | 19-Mar-96 | 18-Jun-96 | 17-Sep-96 |
| Sample Type[1] | | GW | | | | | GW | | | | | GW | | | | |
| VOCs[2,3] | MCL[4] | | | | | | | | | | | | | | | |
| Benzene | 1 | ND<1.0 | ND<0.20 | 0.12 | ND<0.09 | ND<0.50 | ND<1.0 | ND<0.20 | 0.17 | 0.14 | ND<0.50 | ND<1.0 | ND<0.20 | ND<0.09 | ND<0.09 | ND<0.50 |
| Bromobenzene | -- | ND<0.75 | ND<0.15 | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.75 | ND<0.15 | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.75 | ND<0.15 | ND<0.13 | ND<0.13 | ND<1.0 |
| Bromoform | 100 b | ND<0.70 | ND<0.14 | ND<0.25 | ND<0.25 | ND<1.0 | ND<0.70 | ND<0.14 | ND<0.25 | 0.58 | ND<1.0 | ND<0.70 | ND<0.14 | ND<0.25 | ND<0.25 | ND<1.0 |
| sec-Butylbenzene | -- | ND<0.33 | ND<0.26 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.33 | ND<0.26 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.33 | ND<0.26 | ND<0.11 | ND<0.11 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.30 | ND<0.24 | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.30 | ND<0.24 | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.30 | ND<0.24 | ND<0.15 | ND<0.15 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.75 | ND<0.15 | ND<0.16 | ND<0.11 | ND<1.0 | ND<0.75 | ND<0.15 | ND<0.16 | ND<0.11 | ND<1.0 | ND<0.75 | ND<0.15 | ND<0.16 | ND<0.11 | ND<1.0 |
| Carbon disulfide | -- | NA | NA | NA | ND<0.17 | ND<5.0 | NA | NA | NA | ND<0.17 | 0.12J | NA | NA | NA | ND<0.17 | ND<5.0 |
| Carbon tetrachloride | 0.5 | ND<3.2 | 7.9 | 1.7 | 1.6 | 1.3 | ND<3.2 | 6.3 | 4.6 | 5.2 | 2.4 | ND<3.2 | 4.3 | 2.2 | 3.3 | 2.1 |
| Chlorobenzene | 70 | ND<0.38 | ND<0.30 | ND<0.47 | ND<0.14 | ND<1.0 | ND<0.38 | ND<0.30 | ND<0.47 | ND<0.14 | ND<1.0 | ND<0.38 | ND<0.30 | ND<0.47 | ND<0.14 | ND<1.0 |
| Chloroethane | -- | ND<0.59 | ND<0.47 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.59 | ND<0.47 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.59 | ND<0.47 | ND<0.24 | ND<0.24 | ND<1.0 |
| Chloroform | 100 b | 1.0 | 21 | 11 | 8.7 | 6.0 | 2.1 | 19 | 21 | 18 | 11 | 1.2 | 5.3 | 4.0 | 6.4 | 4.1 |
| 1,2-Dichlorobenzene | 600 | ND<1.3 | ND<0.26 | ND<0.27 | ND<0.27 | ND<1.0 | ND<1.3 | ND<0.26 | ND<0.27 | ND<0.27 | ND<1.0 | ND<1.3 | ND<0.26 | ND<0.27 | ND<0.27 | ND<1.0 |
| 1,3-Dichlorobenzene | 130 a | ND<1.4 | ND<0.27 | ND<0.18 | ND<0.18 | ND<1.0 | ND<1.4 | ND<0.27 | ND<0.18 | ND<0.18 | ND<1.0 | ND<1.4 | ND<0.27 | ND<0.18 | ND<0.18 | ND<1.0 |
| 1,4-Dichlorobenzene | 5 | ND<1.4 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<1.4 | ND<0.27 | ND<0.27 | ND<0.27 | 0.12J | ND<1.4 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 |
| 1,1-Dichloroethane | 5 | ND<1.6 | 3.7 | 4.8 | 5.0 | 2.7 | ND<1.6 | 0.78 | 0.90 | 0.86 | 0.55J | ND<1.6 | 0.50 | ND<0.19 | 0.59 | 0.31J |
| 1,2-Dichloroethane | 0.5 | ND<0.70 | 5.1 | 3.2 | 2.2 | 2.2 | ND<0.70 | 6.1 | 6.0 | 4.8 | 3.8 | ND<0.70 | 1.7 | 1.4 | 1.8 | 1.5 |
| 1,1-Dichloroethene | 6 | 30 | 220 | 90 | 180 | 84 | 29 | 6.3 | 12 | 18 | 9.5 | 33 | 4.2 | 4.2 | 10 | 3.5 |
| cis-1,2-Dichloroethene | 6 | 7.9 | 17 | 12 | 11 | 6.4 | 9.7 | 32 | 31 | 27 | 16 | 14 | 29 | 22 | 28 | 17 |
| trans-1,2-Dichloroethene | 10 | ND<0.61 | ND<0.49 | ND<0.17 | 0.26 | 0.14J | ND<0.61 | ND<0.49 | ND<0.17 | ND<0.17 | ND<1.0 | ND<0.61 | ND<0.49 | ND<0.17 | ND<0.17 | ND<1.0 |
| 1,2-Dichloropropane | 5 | ND<1.2 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<1.2 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<1.2 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 |
| Dichlorodifluoromethane | 1000 a | ND<1.8 | ND<0.36 | ND<0.40 | ND<0.40 | ND<1.0 | ND<1.8 | ND<0.36 | ND<0.40 | ND<0.40 | ND<1.0 | ND<1.8 | ND<0.36 | ND<0.40 | ND<0.40 | ND<1.0 |
| Ethylbenzene | 700 | ND<1.1 | ND<0.21 | ND<0.31 | ND<0.16 | ND<1.0 | ND<1.1 | ND<0.21 | ND<0.31 | ND<0.16 | ND<1.0 | ND<1.1 | ND<0.21 | ND<0.31 | ND<0.16 | ND<1.0 |
| Isopropylbenzene | -- | ND<0.29 | ND<0.33 | ND<0.09 | ND<0.09 | ND<1.0 | ND<0.29 | ND<0.33 | ND<0.09 | ND<0.09 | NA | ND<0.29 | ND<0.33 | ND<0.09 | ND<0.09 | NA |
| 4-Isopropyltoluene | -- | ND<0.85 | ND<0.17 | ND<0.24 | ND<0.18 | NA | ND<0.85 | ND<0.17 | ND<0.24 | ND<0.18 | ND<1.0 | ND<0.85 | ND<0.17 | ND<0.24 | ND<0.18 | ND<1.0 |
| Methylene chloride | 40 a | ND<2.3 | 0.47 | ND<0.29 | ND<0.29 | ND<2.0 | ND<2.3 | 0.68 | ND<0.29 | ND<0.29 | ND<2.0 | ND<2.3 | 0.61 | ND<0.29 | ND<0.29 | ND<2.0 |
| Methyl tert butyl ether (MTBE) | 35 a | NA | NA | NA | ND<0.15 | ND<5.0 | NA | NA | NA | ND<0.15 | ND<5.0 | NA | NA | NA | ND<0.15 | ND<5.0 |
| Naphthalene | -- | ND<1.5 | ND<0.29 | ND<0.37 | ND<0.37 | ND<1.0 | ND<1.5 | ND<0.29 | ND<0.37 | ND<0.37 | ND<1.0 | ND<1.5 | ND<0.29 | ND<0.37 | ND<0.37 | ND<1.0 |
| Styrene | 100 | ND<0.41 | ND<0.33 | ND<0.13 | 0.20 | ND<1.0 | ND<0.41 | ND<0.33 | 0.18 | 0.26 | 0.14J | ND<0.41 | ND<0.33 | 0.15 | 0.21 | ND<1.0 |
| Tetrachloroethene | 5 | 110 | 310 | 91 | 130 | 72 | 150 | 710 | 730 | 790 | 510 | 130 | 830 | 680 | 860 | 620 |
| Toluene | 150 | ND<1.1 | ND<0.22 | ND<0.13 | ND<0.13 | ND<1.0 | ND<1.1 | ND<0.22 | 0.19 | ND<0.13 | ND<1.0 | ND<1.1 | ND<0.22 | 0.21 | ND<0.13 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | 4.4 | 22 | 16 | 20 | 13 | ND<1.5 | 1.4 | 2.0 | 2.6 | 1.5 | ND<1.5 | 0.79 | 0.66 | 1.6 | 0.55J |
| Trichloroethene | 5 | 94 | 610 | 200 | 260 | 200 | 140 | 940 | 1,100 | 990 | 690 | 130 | 1,000 | 830 | 1,000 | 740 |
| Trichlorofluoromethane | 150 | ND<2.4 | ND<0.48 | ND<0.32 | ND<0.32 | ND<1.0 | ND<2.4 | ND<0.48 | ND<0.32 | ND<0.32 | ND<1.0 | ND<2.4 | ND<0.48 | ND<0.32 | ND<0.32 | ND<1.0 |
| 1,2,4-Trimethylbenzene | -- | ND<1.0 | ND<0.20 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.20 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.20 | ND<0.11 | ND<0.11 | ND<1.0 |
| Vinyl chloride | 0.5 | ND<2.4 | ND<0.48 | ND<0.20 | ND<0.20 | ND<0.50 | ND<2.4 | ND<0.48 | ND<0.20 | ND<0.20 | ND<0.50 | ND<2.4 | ND<0.48 | ND<0.20 | ND<0.20 | ND<0.50 |
| o-Xylene | 1,750 | ND<0.41 | ND<0.33 | ND<0.13 | ND<0.11 | ND<1.0 | ND<0.41 | ND<0.33 | ND<0.13 | ND<0.11 | ND<1.0 | ND<0.41 | ND<0.33 | ND<0.13 | ND<0.11 | ND<1.0 |
| p/m-Xylenes | 1,750 | ND<0.55 | ND<0.44 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.55 | ND<0.44 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.55 | ND<0.44 | ND<0.35 | ND<0.35 | ND<1.0 |

***Notes:***

**All VOC concentrations are in µg/l.**

[1] Sample Type:
- GW = Groundwater sample
- K = *Duplicate (split) sample*
- N = Equipment decontamination rinsate blank

[2] Only VOCs with detectable concentrations in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996. All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).

[a] California Action Level

[b] Federal MCL

*-- No Standard*

B = Also detected in laboratory's method blank.

bgs = below ground surface

J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than the limit indicated.

NA = Not analyzed.

**Table 4-2**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-03

| Well ID | | MW50305 | | | | | MW50304 | | | | | MW50303 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | 670-680 | | | | | 810-820 | | | | | 920-930 | | | | |
| Sample Date | | 4-Aug-95 | 26-Sep-95 | 18-Mar-96 | 18-Jun-96 | 17-Sep-96 | 4-Aug-95 | 26-Sep-95 | 18-Mar-96 | 18-Jun-96 | 16-Sep-96 | 4-Aug-95 | 26-Sep-95 | 18-Mar-96 | 17-Jun-96 | 16-Sep-96 |
| Sample Type[1] | | GW | | | | | GW | | | | | GW | | | | |
| VOCs[2,3] | MCL[4] | | | | | | | | | | | | | | | |
| Benzene | 1 | ND<0.50 | ND<0.20 | ND<0.09 | ND<0.09 | ND<0.50 | ND<0.20 | ND<0.20 | ND<0.09 | ND<0.09 | ND<0.50 | ND<0.33 | ND<0.20 | ND<0.09 | ND<0.09 | ND<0.50 |
| Bromobenzene | -- | ND<0.38 | ND<0.15 | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.15 | ND<0.15 | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.25 | ND<0.15 | ND<0.13 | ND<0.13 | ND<1.0 |
| Bromoform | 100 b | ND<0.35 | ND<0.14 | ND<0.25 | ND<0.25 | ND<1.0 | ND<0.14 | ND<0.14 | ND<0.25 | ND<0.25 | ND<1.0 | ND<0.23 | ND<0.14 | ND<0.25 | ND<0.25 | ND<1.0 |
| sec-Butylbenzene | -- | ND<0.33 | ND<0.26 | 0.24 | ND<0.11 | ND<1.0 | ND<0.33 | ND<0.26 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.33 | ND<0.26 | ND<0.11 | ND<0.11 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.30 | ND<0.24 | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.30 | ND<0.24 | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.30 | ND<0.24 | ND<0.15 | ND<0.15 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.38 | ND<0.15 | ND<0.16 | ND<0.11 | ND<1.0 | 0.20 | ND<0.15 | ND<0.16 | ND<0.11 | ND<1.0 | ND<0.25 | ND<0.15 | ND<0.16 | ND<0.11 | ND<1.0 |
| Carbon disulfide | -- | NA | NA | NA | ND<0.17 | ND<5.0 | NA | NA | NA | ND<0.17 | 0.13J | NA | NA | NA | ND<0.17 | 0.12J |
| Carbon tetrachloride | 0.5 | ND<1.6 | ND<0.64 | ND<0.46 | ND<0.28 | ND<0.50 | ND<0.64 | ND<0.64 | ND<0.46 | ND<0.28 | ND<0.50 | ND<1.1 | ND<0.64 | ND<0.46 | ND<0.46 | ND<0.50 |
| Chlorobenzene | 70 | ND<0.38 | ND<0.30 | ND<0.47 | ND<0.14 | ND<1.0 | ND<0.38 | ND<0.30 | ND<0.47 | ND<0.14 | ND<1.0 | ND<0.38 | ND<0.30 | ND<0.47 | ND<0.47 | ND<1.0 |
| Chloroethane | -- | ND<0.59 | ND<0.47 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.59 | ND<0.47 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.59 | ND<0.47 | ND<0.24 | ND<0.24 | ND<1.0 |
| Chloroform | 100 b | 1.7 | 1.2 | 0.89 | 0.62 | 0.70J | 1.1 | 1.4 | 1.2 | 1.1 | 0.81J | 2.1 | 0.99 | 1.7 | 1.9 | 1.7 |
| 1,2-Dichlorobenzene | 600 | ND<0.65 | ND<0.26 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.26 | ND<0.26 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.43 | ND<0.26 | ND<0.27 | ND<0.27 | ND<1.0 |
| 1,3-Dichlorobenzene | 130 a | ND<0.68 | ND<0.27 | ND<0.18 | ND<0.18 | ND<1.0 | ND<0.27 | ND<0.27 | ND<0.18 | ND<0.18 | ND<1.0 | ND<0.45 | ND<0.27 | ND<0.18 | ND<0.18 | ND<1.0 |
| 1,4-Dichlorobenzene | 5 | ND<0.68 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.45 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 |
| 1,1-Dichloroethane | 5 | 7.5 | 3.8 | 0.55 | 0.27 | 0.25J | 6.2 | 6.4 | 3.5 | 2.6 | 1.4 | 10 | 0.83 | ND<0.19 | ND<0.19 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | ND<0.35 | 0.30 | ND<0.24 | ND<0.22 | ND<0.50 | ND<0.14 | 0.37 | 0.32 | ND<0.22 | ND<0.50 | ND<0.23 | ND<0.14 | ND<0.22 | ND<0.22 | ND<0.50 |
| 1,1-Dichloroethene | 6 | 31 | 9.4 | 2.2 | 1.3 | 1.5 | 11 | 10 | 4.9 | 3.4 | 1.4 | 23 | 2.0 | ND<0.21 | ND<0.21 | ND<1.0 |
| cis-1,2-Dichloroethene | 6 | 15 | 6.6 | 1.5 | 0.87 | 0.79J | 7.6 | 9.0 | 3.9 | 2.9 | 1.5 | 15 | 1.3 | ND<0.38 | ND<0.38 | ND<1.0 |
| trans-1,2-Dichloroethene | 10 | ND<0.61 | ND<0.49 | ND<0.17 | ND<0.17 | ND<1.0 | ND<0.61 | ND<0.49 | ND,0.17 | ND<0.17 | ND<1.0 | ND<0.61 | ND<0.49 | ND<0.17 | ND<0.17 | ND<1.0 |
| 1,2-Dichloropropane | 5 | ND<0.60 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.40 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 |
| Dichlorodifluoromethane | 1000 a | ND<0.90 | ND<0.36 | ND<0.40 | ND<0.40 | ND<1.0 | ND<0.36 | ND<0.36 | ND<0.40 | ND<0.40 | ND<1.0 | ND<0.60 | ND<0.36 | ND<0.40 | ND<0.40 | ND<1.0 |
| Ethylbenzene | 700 | ND<0.53 | ND<0.21 | ND<0.31 | ND<0.16 | ND<1.0 | ND<0.21 | ND<0.21 | ND<0.31 | ND<0.16 | ND<1.0 | ND<0.35 | ND<0.21 | ND<0.31 | ND<0.16 | ND<1.0 |
| Isopropylbenzene | -- | ND<0.29 | ND<0.33 | ND<0.09 | ND<0.09 | NA | ND<0.29 | ND<0.33 | ND<0.09 | ND<0.09 | ND<1.0 | ND<0.29 | ND<0.33 | ND<0.09 | ND<0.09 | NA |
| 4-Isopropyltoluene | -- | ND<0.43 | ND<0.17 | ND<0.24 | ND<0.18 | ND<1.0 | 0.30 | ND<0.17 | ND<0.24 | ND<0.18 | NA | ND<0.28 | ND<0.17 | ND<0.24 | ND<0.18 | ND<1.0 |
| Methylene chloride | 40 a | ND<1.2 | 0.66 | ND<0.29 | ND<0.29 | ND<2.0 | ND<0.46 | 0.81 | ND<0.29 | ND<0.29 | 0.15J | ND<0.77 | 0.78 | ND<0.29 | ND<0.29 | ND<2.0 |
| Methyl tert butyl ether (MTBE) | 35 a | NA | NA | NA | 0.40 | ND<5.0 | NA | NA | NA | ND<0.15 | ND<5.0 | NA | NA | NA | ND<0.15 | ND<5.0 |
| Naphthalene | -- | ND<0.73 | ND<0.29 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.29 | ND<0.29 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.48 | ND<0.29 | ND<0.37 | ND<0.37 | ND<1.0 |
| Styrene | 100 | ND<0.41 | ND<0.33 | 0.46 | 0.53 | 0.54J | ND<0.41 | ND<0.33 | 0.72 | 0.77 | 0.48J | ND<0.41 | ND<0.33 | 0.47 | 0.21 | 0.23J |
| Tetrachloroethene | 5 | 69 | 21 | 22 | 19 | 22 | 25 | 18 | 12 | 9.7 | 5.5 | 48 | 5.6 | 1.5 | 0.72 | 0.50J |
| Toluene | 150 | ND<0.55 | ND<0.22 | 0.17 | ND<0.13 | 0.24J | 1.6 | 0.23 | 0.21 | 0.21 | ND<1.0 | ND<0.37 | ND<0.22 | 0.20 | ND<0.13 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | 3.7 | 1.4 | ND<0.26 | ND<0.26 | 0.12J | 0.93 | 0.92 | 0.31 | ND<0.26 | ND<1.0 | 1.4 | ND<0.29 | ND<0.26 | ND<0.26 | ND<1.0 |
| Trichloroethene | 5 | 66 | 29 | 37 | 30 | 44 | 21 | 20 | 9.6 | 7.7 | 5.2 | 40 | 4.1 | 0.90 | 0.38 | 0.31J |
| Trichlorofluoromethane | 150 | ND<1.2 | ND<0.48 | ND<0.32 | ND<0.32 | ND<1.0 | ND<0.48 | ND<0.48 | ND<0.32 | ND<0.32 | ND<1.0 | ND<0.80 | ND<0.48 | ND<0.32 | ND<0.32 | ND<1.0 |
| 1,2,4-Trimethylbenzene | -- | ND<0.50 | ND<0.20 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.20 | ND<0.20 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.33 | ND<0.20 | ND<0.11 | ND<0.11 | ND<1.0 |
| Vinyl chloride | 0.5 | ND<1.2 | ND<0.48 | ND<0.20 | ND<0.20 | ND<0.50 | ND<0.48 | ND<0.48 | ND<0.20 | ND<0.20 | ND<0.50 | ND<0.80 | ND<0.48 | ND<0.20 | ND<0.20 | ND<0.50 |
| o-Xylene | 1,750 | ND<0.41 | ND<0.33 | ND<0.13 | ND<0.11 | ND<1.0 | ND<0.41 | ND<0.33 | ND<0.13 | ND<0.11 | ND<1.0 | ND<0.41 | ND<0.33 | ND<0.13 | ND<0.11 | ND<1.0 |
| p/m-Xylenes | 1,750 | ND<0.55 | ND<0.44 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.55 | ND<0.44 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.55 | ND<0.44 | ND<0.35 | ND<0.35 | ND<1.0 |

***Notes:***

**All VOC concentrations are in µg/l.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- N = Equipment decontamination rinsate blank

[2] Only VOCs with detectable concentrations in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996.
All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).

[a] California Action Level
[b] Federal MCL
-- No Standard
B = Also detected in laboratory's method blank.
bgs = below ground surface
J = Result is estimated; value lies between the method detection and reporting limits.
ND = Not detected at a concentration greater than the limit indicated.
NA = Not analyzed.



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Table 4-2
Baldwin Park Operable Unit
*Summary of Groundwater Analytical Results - VOCs*
MW5-03

| **Well ID** | | MW50302 | | | | | MW50301 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Depth (feet bgs)** | | 1015-1025 | | | | | 1150-1160 | | | | |
| **Sample Date** | | 4-Aug-95 | 25-Sep-95 | 18-Mar-96 | 17-Jun-96 | 16-Sep-96 | 4-Aug-95 | 25-Sep-95 | 18-Mar-96 | 17-Jun-96 | 16-Sep-96 |
| **Sample Type**[1] | | GW | | | | | GW | | | | |
| VOCs[2,3] | **MCL**[4] | | | | | | | | | | |
| Benzene | 1 | ND<0.25 | ND<0.20 | ND<0.09 | ND<0.09 | ND<0.50 | ND<0.25 | ND<0.20 | ND<0.09 | ND<0.09 | ND<0.50 |
| Bromobenzene | -- | ND<0.19 | ND<0.15 | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.19 | ND<0.15 | ND<0.13 | ND<0.13 | ND<1.0 |
| Bromoform | 100 b | ND<0.18 | ND<0.14 | ND<0.25 | ND<0.25 | ND<1.0 | ND<0.18 | ND<0.14 | ND<0.25 | ND<0.25 | ND<1.0 |
| sec-Butylbenzene | -- | ND<0.33 | ND<0.26 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.33 | ND<0.26 | **0.24** | ND<0.11 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.30 | ND<0.24 | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.30 | ND<0.24 | ND<0.15 | ND<0.15 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.19 | ND<0.15 | ND<0.16 | ND<0.11 | ND<1.0 | ND<0.19 | ND<0.15 | ND<0.16 | ND<0.11 | ND<1.0 |
| Carbon disulfide | -- | NA | NA | NA | ND<0.17 | **0.35J** | NA | NA | NA | ND<0.17 | **0.13J** |
| Carbon tetrachloride | 0.5 | ND<0.80 | ND<0.64 | ND<0.46 | ND<0.46 | ND<0.50 | ND<0.80 | ND<0.64 | ND<0.46 | ND<0.46 | ND<0.50 |
| Chlorobenzene | 70 | ND<0.38 | ND<0.30 | ND<0.47 | ND<0.47 | ND<1.0 | ND<0.38 | ND<0.30 | ND<0.47 | ND<0.47 | ND<1.0 |
| Chloroethane | -- | ND<0.59 | ND<0.47 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.59 | ND<0.47 | ND<0.24 | ND<0.24 | ND<1.0 |
| Chloroform | 100 b | **2.3** | **1.5** | **1.8** | **2.0** | **2.0** | **1.9** | **1.3** | **0.64** | **0.37** | **0.30J** |
| 1,2-Dichlorobenzene | 600 | ND<0.33 | ND<0.26 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.33 | ND<0.26 | ND<0.27 | ND<0.27 | ND<1.0 |
| 1,3-Dichlorobenzene | 130 a | ND<0.34 | ND<0.27 | ND<0.18 | ND<0.18 | ND<1.0 | ND<0.34 | ND<0.27 | ND<0.18 | ND<0.18 | ND<1.0 |
| 1,4-Dichlorobenzene | 5 | ND<0.34 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.34 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 |
| 1,1-Dichloroethane | 5 | **9.7** | **5.6** | **2.9** | **2.4** | **1.6** | **8.1** | **6.3** | **2.9** | **2.2** | **1.7** |
| 1,2-Dichloroethane | 0.5 | ND<0.18 | **0.41** | ND<0.22 | ND<0.22 | ND<0.50 | ND<0.18 | **0.42** | ND<0.22 | ND<0.22 | ND<0.50 |
| 1,1-Dichloroethene | 6 | **16** | **7.5** | **2.5** | **1.9** | **1.3** | **15** | **7.9** | **1.5** | **0.88** | **0.91J** |
| cis-1,2-Dichloroethene | 6 | **13** | **7.7** | **3.3** | **2.5** | **1.5** | **11** | **7.3** | **2.6** | **1.6** | **1.0** |
| trans-1,2-Dichloroethene | 10 | ND<0.61 | ND<0.49 | ND<0.17 | ND<0.17 | ND<1.0 | ND<0.61 | ND<0.49 | ND<0.17 | ND<0.17 | ND<1.0 |
| 1,2-Dichloropropane | 5 | ND<0.30 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.30 | **0.32** | ND<0.24 | ND<0.24 | ND<1.0 |
| Dichlorodifluoromethane | 1000 a | ND<0.45 | ND<0.36 | ND<0.40 | ND<0.40 | ND<1.0 | ND<0.45 | ND<0.36 | ND<0.40 | ND<0.40 | ND<1.0 |
| Ethylbenzene | 700 | ND<0.26 | ND<0.21 | ND<0.31 | ND<0.16 | **0.13J** | ND<0.26 | ND<0.21 | ND<0.31 | ND<0.16 | **0.15J** |
| Isopropylbenzene | -- | ND<0.29 | ND<0.33 | ND<0.09 | ND<0.09 | NA | ND<0.29 | ND<0.33 | ND<0.09 | ND<0.09 | ND<1.0 |
| 4-Isopropyltoluene | -- | ND<0.21 | ND<0.17 | ND<0.24 | ND<0.18 | **0.19J** | ND<0.21 | ND<0.17 | ND<0.24 | ND<0.18 | NA |
| Methylene chloride | 40 a | ND<0.58 | ND<0.46 | ND<0.29 | ND<0.29 | ND<2.0 | ND<0.58 | ND<0.46 | ND<0.29 | ND<0.29 | ND<2.0 |
| Methyl tert butyl ether (MTBE) | 35 a | NA | NA | NA | ND<0.15 | ND<5.0 | NA | NA | NA | **0.19** | ND<5.0 |
| Naphthalene | -- | ND<0.36 | ND<0.29 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.36 | ND<0.29 | ND<0.37 | ND<0.37 | ND<1.0 |
| Styrene | 100 | ND<0.41 | ND<0.33 | **1.1** | **1.0** | **0.65J** | ND<0.41 | ND<0.33 | **0.92** | **0.74** | **0.63J** |
| Tetrachloroethene | 5 | **42** | **19** | **8.1** | **7.3** | **5.9** | **43** | **20** | **6.0** | **4.6** | **4.8** |
| Toluene | 150 | **0.89** | **0.34** | **0.32** | **0.19** | **0.21J** | **1.1** | **0.40** | **0.48** | **0.33** | **0.41J** |
| 1,1,1-Trichloroethane | 200 | **1.2** | **0.70** | ND<0.26 | ND<0.26 | ND<1.0 | **1.0** | **0.55** | ND<0.26 | ND<0.26 | ND<1.0 |
| Trichloroethene | 5 | **38** | **18** | **7.0** | **5.5** | **4.8** | **34** | **16** | **4.1** | **2.9** | **2.8** |
| Trichlorofluoromethane | 150 | ND<0.60 | ND<0.48 | ND<0.32 | ND<0.32 | ND<1.0 | ND<0.60 | ND<0.48 | ND<0.32 | ND<0.32 | ND<1.0 |
| 1,2,4-Trimethylbenzene | -- | ND<0.25 | ND<0.20 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.25 | ND<0.20 | ND<0.11 | ND<0.11 | ND<1.0 |
| Vinyl chloride | 0.5 | ND<0.60 | ND<0.48 | ND<0.20 | ND<0.20 | ND<0.50 | ND<0.60 | ND<0.48 | ND<0.20 | ND<0.20 | ND<0.50 |
| o-Xylene | 1,750 | ND<0.41 | ND<0.33 | ND<0.13 | ND<0.11 | ND<1.0 | ND<0.41 | ND<0.33 | **0.18** | **0.11** | ND<1.0 |
| p/m-Xylenes | 1,750 | ND<0.55 | ND<0.44 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.55 | ND<0.44 | **0.36** | ND<0.35 | ND<1.0 |

***Notes:***

**All VOC concentrations are in µg/l.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- N = Equipment decontamination rinsate blank

[2] Only VOCs with detectable concentrations in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996. All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).

[a] California Action Level

[b] Federal MCL

-- No Standard

B = Also detected in laboratory's method blank.

bgs = below ground surface

J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than the limit indicated.

NA = Not analyzed.

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**Table 4-2**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-03

| Well ID | | QC Samples | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MW50310 | MW50302 | MW50308 | MW50310 | MW50305 | MW50310 | MW50303 | MW50310 | MW50304 | MW50310 |
| **Sample Depth (feet bgs)** | | | | | | | | | | | |
| **Sample Date** | | 4-Aug-95 | 25-Sep-95 | 26-Sep-95 | 27-Sep-95 | 18-Mar-96 | 19-Mar-96 | 17-Jun-96 | 18-Jun-96 | 16-Sep-96 | 17-Sep-96 |
| **Sample Type[1]** | | N | | | | | | | | | |
| **VOCs[2,3]** | **MCL[4]** | | | | | | | | | | |
| Benzene | 1 | ND<0.20 | ND<0.20 | **0.42** | **0.23** | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.50 | ND<0.50 |
| Bromobenzene | -- | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.13 | ND<0.13 | ND<0.13 | ND<0.13 | ND<1.0 | ND<1.0 |
| Bromoform | 100 b | ND<0.14 | ND<0.14 | ND<0.14 | ND<0.14 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<1.0 | ND<1.0 |
| sec-Butylbenzene | -- | ND<0.33 | ND<0.26 | ND<0.26 | ND<0.26 | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.30 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.15 | ND<1.0 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.16 | ND<0.16 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 |
| Carbon disulfide | -- | NA | NA | NA | NA | NA | NA | ND<0.17 | ND<0.17 | ND<5.0 | ND<5.0 |
| Carbon tetrachloride | 0.5 | ND<0.64 | ND<0.64 | ND<0.64 | ND<0.64 | ND<0.46 | ND<0.46 | ND<0.46 | ND<0.28 | ND<0.50 | ND<0.50 |
| Chlorobenzene | 70 | ND<0.38 | ND<0.30 | ND<0.30 | ND<0.30 | ND<0.47 | ND<0.47 | ND<0.47 | ND<0.14 | ND<1.0 | ND<1.0 |
| Chloroethane | -- | ND<0.59 | ND<0.47 | ND<0.47 | ND<0.47 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<1.0 |
| Chloroform | 100 b | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<1.0 |
| 1,2-Dichlorobenzene | 600 | ND<0.26 | ND<0.26 | ND<0.26 | ND<0.26 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<1.0 |
| 1,3-Dichlorobenzene | 130 a | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.18 | ND<0.18 | ND<0.18 | ND<0.18 | ND<1.0 | ND<1.0 |
| 1,4-Dichlorobenzene | 5 | ND<0.27 | ND<0.27 | **0.70** | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<1.0 |
| 1,1-Dichloroethane | 5 | ND<0.32 | ND<0.32 | ND<0.32 | ND<0.32 | ND<0.19 | ND<0.19 | ND<0.19 | ND<0.19 | ND<1.0 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | ND<0.14 | ND<0.14 | ND<0.14 | ND<0.14 | ND<0.22 | ND<0.22 | ND<0.22 | ND<0.22 | ND<0.50 | ND<0.50 |
| 1,1-Dichloroethene | 6 | ND<0.77 | ND<0.77 | ND<0.77 | ND<0.77 | ND<0.21 | ND<0.21 | ND<0.21 | ND<0.21 | ND<1.0 | ND<1.0 |
| cis-1,2-Dichloroethene | 6 | ND<0.47 | ND<0.47 | ND<0.47 | ND<0.47 | ND<0.38 | ND<0.38 | ND<0.38 | ND<0.17 | ND<1.0 | ND<1.0 |
| trans-1,2-Dichloroethene | 10 | ND<0.61 | ND<0.49 | ND<0.49 | ND<0.49 | ND<0.17 | ND<0.17 | ND<0.17 | ND<0.17 | ND<1.0 | ND<1.0 |
| 1,2-Dichloropropane | 5 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<1.0 |
| Dichlorodifluoromethane | 1000 a | ND<0.36 | ND<0.36 | ND<0.36 | ND<0.36 | ND<0.40 | ND<0.40 | ND<0.40 | ND<0.40 | ND<1.0 | ND<1.0 |
| Ethylbenzene | 700 | ND<0.21 | ND<0.21 | ND<0.21 | ND<0.21 | ND<0.31 | ND<0.31 | ND<0.16 | ND<0.16 | ND<1.0 | ND<1.0 |
| Isopropylbenzene | -- | ND<0.29 | ND<0.33 | ND<0.33 | ND<0.33 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.09 | NA | NA |
| 4-Isopropyltoluene | -- | ND<0.17 | ND<0.17 | ND<0.17 | ND<0.17 | ND<0.24 | ND<0.24 | ND<0.18 | ND<0.18 | ND<1.0 | ND<1.0 |
| Methylene chloride | 40 a | **2.9** | **0.91** | ND<0.46 | **0.73** | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.29 | ND<2.0 | **0.22J** |
| Methyl tert butyl ether (MTBE) | 35 a | NA | NA | NA | NA | NA | NA | ND<0.15 | ND<0.15 | ND<5.0 | ND<5.0 |
| Naphthalene | -- | **0.56** | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.37 | ND<0.37 | ND<0.37 | ND<0.37 | ND<1.0 | ND<1.0 |
| Styrene | 100 | ND<0.41 | ND<0.33 | ND<0.33 | ND<0.33 | ND<0.13 | ND<0.13 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 |
| Tetrachloroethene | 5 | ND<0.41 | ND<0.41 | ND<0.41 | ND<0.41 | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.29 | ND<1.0 | ND<1.0 |
| Toluene | 150 | **1.4** | **0.74** | **2.2** | **1.4** | ND<0.13 | **0.26** | ND<0.13 | ND<0.13 | ND<1.0 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.26 | ND<0.26 | ND<0.26 | ND<0.26 | ND<1.0 | ND<1.0 |
| Trichloroethene | 5 | ND<0.33 | ND<0.33 | ND<0.33 | ND<0.33 | ND<0.21 | ND<0.21 | ND<0.21 | ND<0.21 | ND<1.0 | ND<1.0 |
| Trichlorofluoromethane | 150 | ND<0.48 | ND<0.48 | ND<0.48 | ND<0.48 | ND<0.32 | ND<0.32 | ND<0.32 | ND<0.32 | ND<1.0 | ND<1.0 |
| 1,2,4-Trimethylbenzene | -- | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 |
| Vinyl chloride | 0.5 | ND<0.48 | ND<0.48 | ND<0.48 | ND<0.48 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.50 | ND<0.50 |
| o-Xylene | 1,750 | ND<0.41 | ND<0.33 | ND<0.33 | ND<0.33 | ND<0.13 | ND<0.13 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 |
| p/m-Xylenes | 1,750 | ND<0.55 | ND<0.44 | ND<0.44 | ND<0.44 | ND<0.35 | ND<0.35 | ND<0.35 | ND<0.35 | ND<1.0 | ND<1.0 |

***Notes:***

**All VOC concentrations are in µg/l.**

[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
N = Equipment decontamination rinsate blank

[2] Only VOCs with detectable concentrations in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996.
All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).

[a] California Action Level
[b] Federal MCL
-- No Standard
B = Also detected in laboratory's method blank.
bgs = below ground surface
J = Result is estimated; value lies between the method detection and reporting limits.
ND = Not detected at a concentration greater than the limit indicated.
NA = Not analyzed.

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11/22/96

## Table 4-3
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-05

| Well ID | | MW50504 | | | | | | | MW50503 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | 218 - 228 | | | | | | | 380 - 390 | | | | | | | | |
| Sample Date | | 16-Aug-95 | 16-Aug-95 | 13-Oct-95 | 30-Oct-95 | 20-Mar-96 | 21-Jun-96 | 23-Sep-96 | 16-Aug-95 | 12-Oct-95 | 12-Oct-95 | 30-Oct-95 | 20-Mar-96 | 20-Mar-96 | 21-Jun-96 | 21-Jun-96 | 23-Sep-96 |
| Sample Type[1] | | GW | K | GW | | | | | GW | | K | GW | GW | K | GW | K | GW |
| **VOCs [2,3]** | **MCL [4]** | | | | | | | | | | | | | | | | |
| n-Butylbenzene | -- | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.16 | ND<0.11 | ND<1.0 | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.16 | ND<0.16 | **0.40 B** | ND<0.11 | ND<1.0 |
| Carbon tetrachloride | 0.5 | ND<0.64 | ND<0.64 | ND<0.64 | ND<0.64 | ND<0.46 | ND<0.28 | ND<0.50 | ND<0.64 | **1.7** | **1.4** | ND<0.64 | **0.78** | **0.58** | **0.79** | **0.92** | **0.86** |
| Chloroform | 100 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.24 | ND<0.24 | **0.15J** | ND<0.20 | **0.85** | **0.75** | ND<0.20 | **1.5** | **1.3** | **1.4** | **1.5** | **1.2** |
| Chloromethane | -- | ND<0.25 | ND<0.25 | **0.49** | ND<0.25 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.25 | **1.4** | ND<0.25 | ND<0.25 | ND<0.37 | ND<0.37 | ND<0.37 | ND<0.37 | ND<1.0 |
| 1,1-Dichloroethane | 5 | ND<0.32 | ND<0.32 | ND<0.32 | ND<0.32 | ND<0.19 | ND<0.19 | ND<1.0 | ND<0.32 | **0.47** | **0.43** | ND<0.32 | **0.95** | **0.71** | **0.86** | **0.99** | **0.78J** |
| 1,2-Dichloroethane | 0.5 | ND<0.14 | ND<0.14 | ND<0.14 | ND<0.14 | ND<0.22 | ND<0.22 | ND<0.50 | ND<0.14 | **0.53** | **0.51** | ND<0.14 | **0.97** | **0.80** | **0.91** | **0.97** | **0.73** |
| 1,1-Dichloroethene | 6 | ND<0.77 | ND<0.77 | ND<0.77 | ND<0.77 | ND<0.21 | ND<0.21 | ND<1.0 | **1.1** | **21** | **18** | **14** | **24** | **18** | **24** | **26** | **23** |
| cis-1,2-Dichloroethene | 6 | ND<0.47 | ND<0.47 | ND<0.47 | ND<0.47 | ND<0.38 | ND<0.17 | ND<1.0 | ND<0.47 | **15** | **14** | **12** | **21** | **17** | **20** | **22** | **19** |
| Isopropylbenzene | -- | ND<0.23 | ND<0.23 | ND<0.23 | ND<0.23 | ND<0.09 | ND<0.09 | ND<1.0 | ND<0.23 | ND<0.23 | ND<0.23 | ND<0.23 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.09 | ND<1.0 |
| Methylene chloride | 40 [a] | **0.96** | **0.73** | ND<0.46 | ND<0.46 | ND<0.29 | ND<0.29 | **1.9J** | **0.82** | ND<0.46 | ND<0.46 | ND<0.46 | ND<0.29 | ND<0.29 | **0.49** | **0.53** | **1.4J** |
| Naphthalene | -- | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.29 | **0.45** | ND<0.37 | ND<1.0 | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.37 | ND<0.37 | ND<0.37 | ND<0.37 | ND<1.0 |
| Styrene | 100 | **0.50** | **0.49** | ND<0.33 | ND<0.33 | ND<0.13 | ND<0.11 | ND<1.0 | **0.44** | ND<0.33 | ND<0.33 | ND<0.33 | ND<0.13 | ND<0.13 | ND<0.11 | ND<0.11 | ND<1.0 |
| Tetrachloroethene | 5 | ND<0.41 | ND<0.41 | **0.73** | **0.57** | **1.1** | **1.6** | **1.8** | **3.2** | **90** | **100** | **74** | **180** | **160** | **120** | **140** | **110** |
| Toluene | 150 | **0.34** | **0.41** | ND<0.22 | ND<0.22 | ND<0.13 | ND<0.13 | ND<1.0 | **0.44** | ND<0.22 | ND<0.22 | ND<0.22 | ND<0.13 | **0.17** | ND<0.13 | ND<0.13 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.26 | ND<0.26 | ND<1.0 | **0.33** | **9.1** | **7.9** | **8.0** | **11** | **8.5** | **10** | **12** | **10** |
| Trichloroethene | 5 | ND<0.33 | ND<0.33 | ND<0.33 | ND<0.33 | ND<0.21 | ND<0.21 | **1.1** | **5.4** | **130** | **150** | **100** | **240** | **200** | **160** | **180** | **160** |
| Vinyl Chloride | 0.5 | ND<0.48 | ND<0.48 | ND<0.48 | ND<0.48 | ND<0.20 | ND<0.20 | ND<0.50 | ND<0.48 | ND<0.48 | ND<0.48 | ND<0.48 | ND<0.20 | **0.26** | ND<0.20 | ND<0.20 | ND<0.50 |
| Freon 113[5] | 1200 | NA | NA | NA | NA | NA | NA | ND<5.0 | NA | NA | NA | NA | NA | NA | NA | NA | **0.89J** |
| **EPA Method 300.0** | | | | | | | | | | | | | | | | | |
| Nitrate (as N) | 10 | **11** | **11** | **11** | **42** | **12** | **12** | **9.9** | **9.3** | **3.7** | **3.7** | **13** | **3.7** | **3.7** | **3.6** | **3.6** | **3.9** |
| Nitrite (as N) | 1.0 | ND<0.10 | ND<0.10 | ND<0.05 | ND<0.10 | ND<0.25 | ND<0.25 | ND<0.050 | ND<0.10 | ND<0.05 | ND<0.05 | ND<0.10 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.050 |

***Notes:***

**All VOC concentrations are in µg/l.**

**All concentrations for EPA Method 300.0 are in mg/l.**

[1] Sample Type:

GW = Groundwater sample

K = Duplicate (split) sample

N = Equipment decontamination rinsate blank

[2] Only VOCs with detectable concentrations in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996. All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).

[a] California Action Level

[b] Federal MCL

[5] Freon 113 is 1,1,2-Trichloro-1,2,2-trifluoroethane

-- No Standard

B = Also detected in laboratory's method blank.

bgs = below ground surface

J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than the limit indicated.

NA = Not analyzed.

**CDM** Camp Dresser & McKee
2581-112\sprdshts\5_5ALL.XLS
11/22/96

# Table 4-3
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-05

| Well ID | | MW50502 | | | | | | | MW50501 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Depth (feet bgs)** | | 464 - 474 | | | | | | | 552 - 562 | | | | | |
| **Sample Date** | | 16-Aug-95 | 12-Oct-95 | 30-Oct-95 | 20-Mar-96 | 21-Jun-96 | 23-Sep-96 | 23-Sep-96 | 16-Aug-95 | 12-Oct-95 | 30-Oct-95 | 20-Mar-96 | 21-Jun-96 | 23-Sep-96 |
| **Sample Type[1]** | | GW | | | | | | K | GW | | | | | |
| **VOCs [2,3]** | **MCL [4]** | | | | | | | | | | | | | |
| n-Butylbenzene | -- | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.16 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.16 | ND<0.11 | ND<1.0 |
| Carbon tetrachloride | 0.5 | ND<0.64 | **1.4** | ND<0.64 | **1.1** | **1.1** | **0.75** | **0.97** | ND<0.64 | **11** | **8.0** | **6.8** | **13** | **8** |
| Chloroform | 100 | ND<0.20 | **0.39** | ND<0.20 | ND<0.24 | **0.40** | **0.30J** | **0.38J** | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.24 | ND<0.24 | **0.19J** |
| Chloromethane | -- | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.37 | ND<0.37 | ND<1.0 | ND<1.0 | ND<0.25 | **0.75** | ND<0.25 | ND<0.37 | ND<0.37 | ND<1.0 |
| 1,1-Dichloroethane | 5 | ND<0.32 | ND<0.32 | ND<0.32 | ND<0.19 | ND<0.19 | ND<1.0 | ND<1.0 | ND<0.32 | ND<0.32 | ND<0.32 | ND<0.19 | ND<0.19 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | ND<0.14 | **0.30** | ND<0.14 | ND<0.22 | ND<0.22 | ND<0.50 | **0.20J** | ND<0.14 | ND<0.14 | ND<0.14 | ND<0.22 | ND<0.22 | ND<0.50 |
| 1,1-Dichloroethene | 6 | ND<0.77 | **10** | **5.2** | **5.2** | **6.9** | **5** | **6.5** | ND<0.77 | ND<0.77 | ND<0.77 | ND<0.21 | ND<0.21 | ND<1.0 |
| cis-1,2-Dichloroethene | 6 | ND<0.47 | **6.3** | **4.6** | **4.9** | **5.9** | **5** | **6** | ND<0.47 | ND<0.47 | ND<0.47 | ND<0.38 | ND<0.17 | ND<1.0 |
| Isopropylbenzene | -- | ND<0.23 | ND<0.23 | ND<0.23 | **0.11** | ND<0.09 | ND<1.0 | ND<1.0 | ND<0.23 | ND<0.23 | ND<0.23 | ND<0.09 | ND<0.09 | ND<1.0 |
| *Methylene chloride* | *40 [a]* | ***0.93*** | *ND<0.46* | *ND<0.46* | *ND<0.29* | ***0.44*** | ***1.4J*** | ***1.4J*** | ***0.80*** | *ND<0.46* | *ND<0.46* | *ND<0.29* | *ND<0.29* | ***2.2*** |
| Naphthalene | -- | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.37 | ND<0.37 | ND<1.0 | ND<1.0 | ND<0.29 | ND<0.29 | ND<0.29 | **0.40** | ND<0.37 | ND<1.0 |
| Styrene | 100 | **0.62** | ND<0.33 | ND<0.33 | ND<0.13 | ND<0.11 | ND<1.0 | ND<1.0 | **0.51** | ND<0.33 | ND<0.33 | ND<0.13 | ND<0.11 | ND<1.0 |
| Tetrachloroethene | 5 | ND<0.41 | **31** | **19** | **19** | **23** | **23** | **29** | ND<0.41 | ND<0.41 | ND<0.41 | **0.77** | ND<0.29 | ND<1.0 |
| Toluene | 150 | **0.37** | ND<0.22 | ND<0.22 | **0.16** | ND<0.13 | ND<1.0 | ND<1.0 | **0.44** | ND<0.22 | ND<0.22 | **0.17** | ND<0.13 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | ND<0.29 | **3.2** | **2.3** | **2.0** | **2.4** | **1.8** | **2.3** | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.26 | ND<0.26 | ND<1.0 |
| Trichloroethene | 5 | ND<0.33 | **66** | **37** | **39** | **53** | **51** | **64** | ND<0.33 | ND<0.33 | ND<0.33 | **0.54** | ND<0.21 | **1.1** |
| Vinyl Chloride | 0.5 | ND<0.48 | ND<0.48 | ND<0.48 | ND<0.20 | ND<0.20 | ND<0.50 | ND<0.50 | ND<0.48 | ND<0.48 | ND<0.48 | ND<0.20 | ND<0.20 | ND<0.50 |
| Freon 113[5] | 1200 | NA | NA | NA | NA | NA | ND<5.0 | ND<5.0 | NA | NA | NA | NA | NA | ND<5.0 |
| ***EPA Method 300.0*** | | | | | | | | | | | | | | |
| Nitrate (as N) | 10 | **9.3** | **3.6** | **12** | **3.3** | **3.5** | **3.8** | **3.8** | **9.2** | **2.1** | **8.7** | **2.0** | **2.0** | **2.0** |
| Nitrite (as N) | 1.0 | ND<0.10 | ND<0.05 | ND<0.10 | ND<0.25 | ND<0.25 | ND<0.050 | ND<0.050 | ND<0.10 | ND<0.05 | ND<0.10 | ND<0.25 | ND<0.25 | ND<0.050 |

***Notes:***

**All VOC concentrations are in µg/l.**

**All concentrations for EPA Method 300.0 are in mg/l.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- N = Equipment decontamination rinsate blank

[2] Only VOCs with detectable concentrations in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996. All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).

[a] California Action Level

[b] Federal MCL

[5] Freon 113 is 1,1,2-Trichloro-1,2,2-trifluoroethane

-- No Standard

B = Also detected in laboratory's method blank.

bgs = below ground surface

J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than the limit indicated.

NA = Not analyzed.

**Table 4-3**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-05

| Well ID | | QC Samples | | | | |
|---|---|---|---|---|---|---|
| | | MW50504N | MW50504N | MW50504N | MW50504N | MW50504N |
| **Sample Depth (feet bgs)** | | -- | -- | -- | -- | -- |
| **Sample Date** | | 16-Aug-95 | 13-Oct-95 | 20-Mar-96 | 21-Jun-96 | 23-Sep-96 |
| **Sample Type**[1] | | N | | | | |
| **VOCs** [2,3] | **MCL**[4] | | | | | |
| n-Butylbenzene | -- | ND<0.15 | ND<0.15 | ND<0.16 | ND<0.11 | ND<1.0 |
| Carbon tetrachloride | 0.5 | ND<0.64 | ND<0.64 | ND<0.46 | ND<0.28 | ND<0.50 |
| Chloroform | 100 | ND<0.20 | **0.37** | ND<0.24 | ND<0.24 | ND<1.0 |
| Chloromethane | -- | ND<0.25 | **0.89** | ND<0.37 | ND<0.37 | ND<1.0 |
| 1,1-Dichloroethane | 5 | ND<0.32 | ND<0.32 | ND<0.19 | ND<0.19 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | ND<0.14 | ND<0.14 | ND<0.22 | ND<0.22 | ND<0.50 |
| 1,1-Dichloroethene | 6 | ND<0.77 | ND<0.77 | ND<0.21 | ND<0.21 | ND<1.0 |
| cis-1,2-Dichloroethene | 6 | ND<0.47 | ND<0.47 | ND<0.38 | ND<0.17 | ND<1.0 |
| Isopropylbenzene | -- | ND<0.23 | ND<0.23 | ND<0.09 | ND<0.09 | ND<1.0 |
| *Methylene chloride* | 40 [a] | **3.5** | **1.5** | ND<0.29 | ND<0.29 | ND<2.0 |
| Naphthalene | -- | ND<0.29 | ND<0.29 | ND<0.37 | ND<0.37 | ND<1.0 |
| Styrene | 100 | **0.53** | ND<0.33 | ND<0.13 | ND<0.11 | ND<1.0 |
| Tetrachloroethene | 5 | ND<0.41 | ND<0.41 | ND<0.29 | ND<0.29 | ND<1.0 |
| Toluene | 150 | ND<0.22 | **0.81** | ND<0.13 | ND<0.13 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | ND<0.29 | ND<0.29 | ND<0.26 | ND<0.26 | ND<1.0 |
| Trichloroethene | 5 | ND<0.33 | ND<0.33 | **0.51** | ND<0.21 | ND<1.0 |
| Vinyl Chloride | 0.5 | ND<0.48 | ND<0.48 | ND<0.20 | ND<0.20 | ND<0.50 |
| Freon 113[5] | 1200 | NA | NA | NA | NA | ND<5.0 |
| **EPA Method 300.0** | | | | | | |
| Nitrate (as N) | 10 | **0.14** | **0.12** | ND<0.25 | ND<0.25 | ND<0.050 |
| *Nitrite (as N)* | *1.0* | *ND<0.10* | *ND<0.05* | *ND<0.25* | *ND<0.25* | *ND<0.050* |

***Notes:***

**All VOC concentrations are in µg/l.**

**All concentrations for EPA Method 300.0 are in mg/l.**

[1] Sample Type:

*GW = Groundwater sample*

K = Duplicate (split) sample

N = Equipment decontamination rinsate blank

[2] Only VOCs with detectable concentrations in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996.

*All other samples were analyzed for VOCs using EPA Method 8260.*

[4] California Maximum Contaminant Level (as of 12/95).

[a] California Action Level

[b] Federal MCL

[5]*Freon 113 is 1,1,2-Trichloro-1,2,2-trifluoroethane*

-- No Standard

B = Also detected in laboratory's method blank.

bgs = below ground surface

J = Result is estimated; value lies between the method detection and reporting limits.

*ND = Not detected at a concentration greater than the limit indicated.*

NA = Not analyzed.

**Table 4-4**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-08

| **Well ID** | | MW50804 | | MW50803 | | MW50802 | | MW50801 | | QC Sample MW50803N |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Depth (feet bgs)** | | 380 - 390 | | 554 - 564 | | 670 - 680 | | 795 - 805 | | -- |
| **Sample Date** | | 13-Aug-96 | 24-Sep-96 | 13-Aug-96 | 24-Sep-96 | 13-Aug-96 | 24-Sep-96 | 13-Aug-96 | 24-Sep-96 | 24-Sep-96 |
| **Sample Type[1]** | | GW | | GW | | GW | | GW | | N |
| **VOCs[2,3]** | **MCL[4]** | | | | | | | | | |
| Benzene | 1 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 |
| n-Butylbenzene | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Carbon tetrachloride | 0.5 | **0.31 J** | ND<0.50 | **0.78** | **0.66J** | **0.62** | **0.33 J** | **1.2** | **0.66** | ND<0.50 |
| Carbon disulfide | -- | **0.27 J** | ND<5.0 | ND<5.0 | ND<5.0 | ND<5.0 | ND<5.0 | ND<5.0 | ND<5.0 | ND<5.0 |
| Chlorobenzene | 70 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Chloroform | 100 [b] | **0.11 J** | **0.12 J** | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| 1,1-Dichloroethane | 5 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 |
| 1,1-Dichloroethene | 6 | **2.1** | **1.6** | ND<1.0 | ND<1.0 | **0.61 J** | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| cis-1,2-Dichloroethene | 6 | **1.5** | **1.7** | ND<1.0 | ND<1.0 | **0.41 J** | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| trans-1,2-Dichloroethene | 10 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Methylene chloride | 40 [a] | ND<2.0 | **1.3 J** | ND<2.0 | **1.1 J** | ND<2.0 | **0.50 J** | ND<2.0 | **1.3 J** | **1.8 J** |
| Methyl tert-butyl ether | 35 [a] | ND<5.0 | ND<5.0 | ND<5.0 | ND<5.0 | ND<5.0 | ND<5.0 | ND<5.0 | **1.2 J** | **1.0 J** |
| Styrene | 100 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| 1,1,1,2-Tetrachloroethane | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Tetrachloroethene | 5 | **14** | **9.5** | **0.31 J** | ND<1.0 | **4.7** | **0.20 J** | **0.21 J** | ND<1.0 | ND<1.0 |
| Toluene | 150 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | **1.2** | **0.90 J** | ND<1.0 | ND<1.0 | **0.35 J** | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| 1,1,2-Trichloroethane | 5 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Trichloroethene | 5 | **16** | **13** | **0.31 J** | **0.61 J** | **5.3** | **0.36 J** | **0.21 J** | **0.66 J** | **0.61 J** |
| Total Xylenes | 1,750 | ND<0.30 | ND<0.30 | ND<0.30 | ND<0.30 | ND<0.30 | ND<0.30 | ND<0.30 | ND<0.30 | ND<0.30 |
| **EPA Method 300.0** | | | | | | | | | | |
| Nitrate (as N) | 10 | **3.1** | **0.63** | **1.2** | **1.1** | **1.7** | **1.3** | **1.3** | **1.3** | ND<0.05 |
| Nitrite (as N) | 1.0 | ND<1.0 | ND<0.05 | ND<1.0 | ND<0.05 | ND<1.0 | ND<0.05 | ND<1.0 | ND<0.05 | ND<0.05 |

***Notes:***

**All VOC concentrations are reported in mg/l.**

**All concentrations for EPA Method 300.0 are in mg/l.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- N = Equipment decontamination rinsate blank

[2] Only VOCs with detectable concentrations in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8260.

ND = Not detected at a concentration greater than the limit indicated.

[4] California Maximum Contaminant Level (as of 12/95).

[a] California Action Level

[b] Federal MCL

-- No Standard

B = Also detected in laboratory's method blank.

bgs = below ground surface

J = Result is estimated because value lies between the method and reporting limit.

NA = Not analyzed.

**CDM** Camp Dresser & McKee
2581-112\sprdshts\5_8ALL.XLS
11/22/96

**Table 4-5**
Baldwin Park Operable Unit
*Summary of Groundwater Analytical Results - VOCs*
MW5-11

| Well ID | | MW51103 | | | | | | | MW51102 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | 310 - 320 | | | | | | | 530 - 540 | | | | | |
| Sample Date | | 10-Oct-95 | 13-Nov-95 | 14-Mar-96 | 14-Mar-96 | 24-Jun-96 | 24-Jun-96 | 20-Sep-96 | 10-Oct-95 | 13-Nov-95 | 13-Nov-95 | 14-Mar-96 | 24-Jun-96 | 20-Sep-96 |
| Sample Type[1] | | GW | | | K | GW | K | GW | GW | | K | GW | | |
| VOCs[2,3] | MCL[4] | | | | | | | | | | | | | |
| Benzene | 1 | ND<0.2 | ND<0.2 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.50 | ND<0.2 | ND<0.2 | ND<0.2 | ND<0.09 | ND<0.09 | ND<0.50 |
| Bromodichloromethane | 100 [b] | 0.41 | ND<0.37 | ND<0.44 | ND<0.44 | ND<0.28 | ND<0.28 | 0.22J | 0.38 | ND<0.37 | ND<0.37 | ND<0.44 | ND<0.28 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.15 | ND<0.15 | ND<0.16 | ND<0.16 | ND<0.11 | 0.39 | ND<1.0 | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.16 | ND<0.11 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.24 | ND<0.24 | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.15 | ND<0.15 | ND<1.0 |
| Carbon tetrachloride | 0.5 | 2.9 | ND<0.64 | 1.4 | 1.6 | 1.1 | 1.0 | 1.1 | 2.7 | ND<0.64 | ND<0.64 | 2.8 | 4.0 | 2.1 |
| Chloroform | 100 [b] | 1.2 | 1.4 | 2.3 | 2.6 | 2.8 | 2.6 | 2.7 | ND<0.20 | 3.8 | 4.2 | 4.6 | 4.5 | 3.1 |
| 1,2-Dibromoethane (EDB) | 0.05 | ND<0.24 | ND<0.24 | ND<0.23 | ND<0.23 | ND<0.23 | ND<0.23 | ND<1.0 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.23 | 0.38 | ND<1.0 |
| 1,1-Dichloroethane | 5 | 0.53 | 0.54 | 1.2 | 1.2 | 1.2 | 1.1 | 0.96J | 0.58 | ND<0.32 | ND<0.32 | ND<0.19 | 0.35 | 0.26J |
| 1,2-Dichloroethane | 0.5 | 1.1 | 0.96 | 1.1 | 1.2 | 1.5 | 1.4 | 2.1 | 1.2 | 1.9 | 2.0 | 2.8 | 2.8 | 1.8 |
| 1,1-Dichloroethene | 6 | 35 | 21 | 16 | 18 | 21 | 19 | 21 | 28 | 1.4 | 2.3 | 1.4 | 1.8 | 1.5 |
| cis-1,2-Dichloroethene | 6 | 11 | 8.3 | 7.8 | 8.6 | 8.9 | 8.5 | 14 | 16 | 30 | 34 | 44 | 58 | 39 |
| trans-1,2-Dichloroethene | 10 | ND<0.49 | ND<0.49 | ND<0.17 | ND<0.17 | ND<0.17 | ND<0.17 | 0.27J | ND<0.49 | ND<0.49 | ND<0.49 | ND<0.17 | ND<0.17 | 0.22J |
| 1,2-Dichloropropane | 5 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | 0.15J |
| Methylene chloride | 40 [a] | 0.57 | ND<0.46 | 1.0B | ND<0.29 | 0.70 | 0.70 | 0.24J | ND<0.46 | ND<0.46 | ND<0.46 | ND<0.29 | 0.85 | 0.28J |
| Methyl tert-butyl ether | 35 [a] | NA | NA | NA | NA | ND<0.15 | 1.3 | ND<5.0 | NA | NA | NA | NA | 0.84 | ND<5.0 |
| Naphthalene | -- | ND<0.29 | ND<0.29 | ND<0.37 | ND<0.37 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.37 | ND<0.37 | ND<1.0 |
| Styrene | 100 | ND<0.33 | ND<0.33 | ND<0.13 | ND<0.13 | 0.14 | ND<0.11 | ND<1.0 | ND<0.33 | ND<0.33 | ND<0.33 | 0.34 | 0.23 | 0.11J |
| Tetrachloroethene | 5 | 280 | 170 | 110 | 110 | 97 | 86 | 120 | 350 | 580 | 630 | 650 | 1,100 | 700 |
| Toluene | 150 | ND<0.22 | 0.28 | ND<0.13 | ND<0.13 | 0.20 | 0.24 | ND<1.0 | ND<0.22 | 0.36 | 0.24 | ND<0.13 | 0.26 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | 17 | 11 | 6.6 | 7.7 | 8.0 | 7.7 | 7.7 | 13 | 0.89 | 1.1 | ND<0.26 | 0.29 | 0.11J |
| 1,1,2-Trichloroethane | 5 | ND<0.2 | ND<0.2 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.2 | ND<0.2 | ND<0.2 | ND<0.27 | ND<0.27 | 0.30J |
| Trichloroethene | 5 | 170 | 110 | 100 | 100 | 94 | 83 | 120 | 260 | 450 | 470 | 540 | 790 | 590 |
| Trichlorofluoromethane | 150 | 0.59 | ND<0.48 | 1.7 | 2.0 | 1.9 | 1.7 | 0.70J | 0.48 | ND<0.48 | ND<0.48 | ND<0.32 | ND<0.32 | ND<1.0 |
| p,m-Xylenes | 1,750 | ND<0.44 | ND<0.44 | ND<0.35 | ND<0.35 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.44 | 0.53 | ND<0.44 | ND<0.35 | ND<0.35 | ND<1.0 |

***Notes:***

**All VOC concentrations are in µg/l.**

[1] *Sample Type:*
GW = Groundwater sample
K = Duplicate (split) sample
N = Equipment decontamination blank

[2] Only compounds detected in one or more samples are listed.

ND = Not detected at a concentration greater than the limit indicated.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996. All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).

[a] *California Action Level*

[b] Federal MCL

-- No Standard

B = Also detected in laboratory's method blank.

bgs = below ground surface

J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than the limit indicated.

NA = Not analyzed.

**CDM** Camp Dresser & McKee
2581-112\SPRDSHTS\5_11ALL.XLS
11/25/96

**Table 4-5**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-11

| Well ID | | MW51101 | | | | | | QC Samples MW51103N | MW51103N | MW51103N | MW51102N | MW51102N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | 690 - 700 | | | | | | -- | -- | -- | -- | -- |
| Sample Date | | 10-Oct-95 | 13-Nov-95 | 14-Mar-96 | 24-Jun-96 | 20-Sep-96 | 20-Sep-96 | 10-Oct-95 | 13-Nov-95 | 14-Mar-96 | 24-Jun-96 | 20-Sep-96 |
| Sample Type[1] | | GW | | | | | K | N | | | | |
| VOCs[2,3] | MCL[4] | | | | | | | | | | | |
| Benzene | 1 | ND<0.2 | ND<0.2 | ND<0.09 | ND<0.09 | ND<0.50 | ND<0.50 | ND<0.2 | ND<0.2 | ND<0.09 | ND<0.09 | 0.12J |
| Bromodichloromethane | 100 [b] | ND<0.37 | ND<0.37 | ND<0.44 | ND<0.28 | ND<1.0 | ND<1.0 | ND<0.37 | ND<0.37 | ND<0.44 | ND<0.28 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.15 | ND<0.15 | ND<0.16 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.15 | 0.19 | ND<0.16 | ND<0.11 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.24 | ND<0.24 | ND<0.15 | ND<0.15 | ND<1.0 | ND<1.0 | ND<0.24 | ND<0.24 | ND<0.15 | 0.43 | ND<1.0 |
| Carbon tetrachloride | 0.5 | 1.6 | ND<0.64 | ND<0.46 | 0.45 | 0.39J | 0.44J | ND<0.64 | ND<0.64 | ND<0.46 | ND<0.28 | ND<1.0 |
| Chloroform | 100 [b] | 0.64 | ND<0.20 | ND<0.24 | ND<0.24 | ND<1.0 | 0.10J | ND<0.20 | ND<0.20 | ND<0.24 | ND<0.24 | ND<1.0 |
| 1,2-Dibromoethane (EDB) | 0.05 | ND<0.24 | ND<0.24 | ND<0.23 | ND<0.23 | ND<1.0 | ND<1.0 | ND<0.24 | ND<0.24 | ND<0.23 | ND<0.23 | ND<1.0 |
| 1,1-Dichloroethane | 5 | 0.38 | ND<0.32 | ND<0.19 | ND<0.19 | ND<1.0 | ND<1.0 | ND<0.32 | ND<0.32 | ND<0.19 | ND<0.19 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | 0.57 | ND<0.14 | ND<0.22 | ND<0.22 | ND<0.50 | ND<0.50 | ND<0.14 | ND<0.14 | ND<0.22 | ND<0.22 | ND<1.0 |
| 1,1-Dichloroethene | 6 | 19 | ND<0.77 | ND<0.21 | ND<0.21 | ND<1.0 | ND<1.0 | ND<0.77 | ND<0.77 | ND<0.21 | ND<0.21 | ND<1.0 |
| cis-1,2-Dichloroethene | 6 | 4.8 | ND<0.47 | ND<0.38 | ND<0.17 | 0.21J | ND<1.0 | ND<0.47 | ND<0.47 | ND<0.38 | ND<0.17 | ND<1.0 |
| trans-1,2-Dichloroethene | 10 | ND<0.49 | ND<0.49 | ND<0.17 | ND<0.17 | ND<1.0 | ND<1.0 | ND<0.49 | ND<0.49 | ND<0.17 | ND<0.17 | ND<1.0 |
| 1,2-Dichloropropane | 5 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<1.0 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 |
| Methylene chloride | 40 [a] | 0.46 | ND<0.46 | ND<0.29 | ND<0.29 | 0.32J | 0.34J | ND<0.46 | ND<0.46 | ND<0.29 | ND<0.29 | 0.72J |
| Methyl tert-butyl ether | 35 [a] | NA | NA | NA | 0.73 | ND<5.0 | ND<5.0 | NA | NA | NA | ND<0.15 | ND<5.0 |
| Naphthalene | -- | ND<0.29 | ND<0.29 | ND<0.37 | ND<0.37 | ND<1.0 | ND<1.0 | ND<0.29 | ND<0.29 | ND<0.37 | 1.1 | ND<1.0 |
| Styrene | 100 | ND<0.33 | ND<0.33 | ND<0.13 | 0.18 | 0.12J | 0.12J | ND<0.33 | ND<0.33 | ND<0.13 | ND<0.11 | ND<1.0 |
| Tetrachloroethene | 5 | 140 | 10 | 7.9 | 7.9 | 8.7 | 9.8 | ND<0.41 | ND<0.41 | ND<0.29 | ND<0.29 | ND<1.0 |
| Toluene | 150 | ND<0.22 | 0.35 | 0.16 | 0.23 | ND<1.0 | ND<1.0 | 0.31 | 0.31 | 0.17 | ND<0.13 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | 9.8 | ND<0.29 | ND<0.26 | ND<0.26 | ND<1.0 | ND<1.0 | ND<0.29 | ND<0.29 | ND<0.26 | ND<0.26 | ND<1.0 |
| 1,1,2-Trichloroethane | 5 | ND<0.2 | ND<0.2 | ND<0.27 | ND<0.27 | ND<1.0 | ND<1.0 | ND<0.2 | ND<0.2 | ND<0.27 | ND<0.27 | ND<1.0 |
| Trichloroethene | 5 | 82 | 14 | 21 | 19 | 26 | 28 | ND<0.33 | ND<0.33 | ND<0.21 | ND<0.21 | 0.24J |
| Trichlorofluoromethane | 150 | ND<0.48 | ND<0.48 | ND<0.32 | ND<0.32 | ND<1.0 | ND<1.0 | ND<0.48 | ND<0.48 | ND<0.32 | ND<0.32 | ND<1.0 |
| p,m-Xylenes | 1,750 | ND<0.44 | 0.50 | ND<0.35 | ND<0.35 | ND<1.0 | ND<1.0 | ND<0.44 | ND<0.44 | ND<0.35 | ND<0.35 | ND<1.0 |

***Notes:***

**All VOC concentrations are in µg/l.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- N = Equipment decontamination blank

[2] Only compounds detected in one or more samples are listed.

ND = Not detected at a concentration greater than the limit indicated.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996. All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).

[a] California Action Level

[b] Federal MCL

-- No Standard

B = Also detected in laboratory's method blank.

bgs = below ground surface

J = Result is estimated; value lies between the method detection and reporting li

ND = Not detected at a concentration greater than the limit indicated.

NA = Not analyzed.

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11/25/96

Table 4-6
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-13

| Well ID | | MW51303 | | | | | | MW51302 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | 340 - 350 | | | | | | 520 - 530 | | | | | |
| Sample Date | | 18-Jan-96 | 15-Feb-96 | 14-Mar-96 | 21-Jun-96 | 21-Jun-96 | 19-Sep-96 | 18-Jan-96 | 18-Jan-96 | 15-Feb-96 | 14-Mar-96 | 21-Jun-96 | 19-Sep-96 |
| Sample Type[1] | | GW | GW | GW | GW | K | GW | GW | K | GW | GW | GW | GW |
| VOCs[2,3] | MCL[4] | | | | | | | | | | | | |
| Benzene | 1 | ND<0.09 | ND<0.09 | ND<0.09 | 0.14 | ND<0.09 | ND<0.50 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.50 |
| Bromodichloromethane | 100 [b] | ND<0.44 | ND<0.44 | ND<0.44 | ND<0.28 | ND<0.28 | ND<1.0 | ND<0.44 | ND<0.44 | ND<0.44 | ND<0.44 | ND<0.28 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.16 | ND<0.16 | ND<0.16 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.16 | ND<0.16 | ND<0.16 | ND<0.16 | 0.22B | ND<1.0 |
| sec-Butylbenzene | -- | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | 0.17 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.15 | ND<1.0 |
| Carbon tetrachloride | 0.5 | 7.2 | 7.2 | 4.6 | 17 | 16 | 13 | 0.79 | 0.74 | ND<0.46 | ND<0.46 | 0.90 | 0.51J |
| Chlorobenzene | 70 | ND<0.47 | ND<0.47 | ND<0.47 | 0.19 | ND<0.14 | ND<1.0 | ND<0.47 | ND<0.47 | ND<0.47 | ND<0.47 | ND<0.14 | ND<1.0 |
| Chloroform | 100 [b] | 11 | 12 | 9.7 | 30 | 29 | 28 | 1.0 | 0.88 | 0.66 | ND<0.24 | 1.2 | 0.62J |
| Chloromethane | -- | ND<0.37 | ND<0.37 | ND<0.37 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<0.37 | ND<0.37 | ND<0.37 | 0.33J |
| 1,1-Dichloroethane | 5 | 0.52 | 0.55 | ND<0.19 | 1.1 | 1.0 | 0.89J | ND<0.19 | ND<0.19 | ND<0.19 | ND<0.19 | ND<0.19 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | 8.4 | 9.1 | 8.7 | 18 | 16 | 12 | 0.60 | 0.63 | ND<0.22 | ND<0.22 | 0.61 | 0.29J |
| 1,1-Dichloroethene | 6 | 2.5 | 3.7 | 2.2 | 9.2 | 8.3 | 6.9 | 0.33 | 0.24 | ND<0.21 | ND<0.21 | 0.59 | 0.45J |
| cis-1,2-Dichloroethene | 6 | 28 | 29 | 21 | 33 | 31 | 30 | 2.7 | 2.6 | 2.3 | 2.6 | 5.6 | 3.7 |
| trans-1,2-Dichloroethene | 10 | 1.0 | ND<0.17 | ND<0.17 | ND<0.17 | ND<0.17 | 0.32J | ND<0.17 | ND<0.17 | ND<0.17 | ND<0.17 | ND<0.17 | ND<1.0 |
| Methylene chloride | 40 [a] | ND<0.29 | ND<0.29 | ND<0.29 | 0.47 | 0.70 | 0.66J | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.29 | 0.65 | 0.51J |
| Propylbenzene | -- | ND<0.22 | ND<0.22 | ND<0.22 | ND<0.56 | ND<0.56 | ND<1.0 | ND<0.22 | ND<0.22 | 0.38 | ND<0.22 | ND<0.56 | ND<1.0 |
| Styrene | 100 | 0.33B | ND<0.13 | ND<0.13 | ND<0.11 | ND<0.11 | ND<1.0 | 0.27B | ND<0.13 | ND<0.13 | ND<0.13 | 0.13 | ND<1.0 |
| Tetrachloroethene | 5 | 230 | 230 | 230 | 800 | 720 | 570 | 100 | 93 | 88 | 120 | 280 | 210 |
| Toluene | 150 | 0.14 | 0.30 | ND<0.13 | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.13 | ND<0.13 | ND<0.13 | ND<0.13 | ND<0.13 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | 1.0 | 1.4 | 0.63 | 1.5 | 1.5 | 0.87J | ND<0.26 | ND<0.26 | ND<0.26 | ND<0.26 | ND<0.26 | ND<1.0 |
| 1,1,2-Trichloroethane | 5 | ND<0.27 | ND<0.27 | ND<0.27 | 0.85 | 0.79 | 0.64J | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 |
| Trichloroethene | 5 | 600 | 660 | 570 | 1,400 | 1,300 | 1400 | 110 | 110 | 88 | 110 | 180 | 140 |
| Trichlorofluoromethane | 150 | ND<0.32 | ND<0.32 | ND<0.32 | ND<0.32 | ND<0.32 | 0.32J | ND<0.32 | ND<0.32 | ND<0.32 | ND<0.32 | ND<0.32 | ND<1.0 |
| 1,2,4-Trimethylbenzene | -- | 0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | 0.13 | ND<1.0 |
| o-Xylene | 1,750 | ND<0.13 | ND<0.13 | ND<0.13 | ND<0.11 | ND<0.11 | ND<1.0 | 0.27 | ND<0.13 | ND<0.13 | ND<0.13 | 0.12 | ND<1.0 |
| p,m-Xylenes | 1,750 | ND<0.35 | ND<0.35 | ND<0.35 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.35 | ND<0.35 | ND<0.35 | ND<0.35 | ND<0.35 | ND<1.0 |

*Notes:*

**All VOC concentrations are in µg/l.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- N = Equipment decontamination rinsate blank

[2] *Only VOCs with detectable concentrations in one or more samples are listed.*

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996. All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).

[a] California Action Level
[b] Federal MCL
-- No Standard
B = Also detected in laboratory's method blank.
bgs = below ground surface
J = Result is estimated; value lies between the method detection and reporting limits.
ND = Not detected at a concentration greater than the limit indicated.
NA = Not analyzed.



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2581-112\SPRDSHTS_13ALL.XLS
11/22/96

Table 4-6
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-13

| Well ID | | MW51301 | | | | | QC Samples MW51303N | |
|---|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | 684 - 694 | | | | | -- | |
| Sample Date | | 18-Jan-96 | 15-Feb-96 | 14-Mar-96 | 21-Jun-96 | 19-Sep-96 | 18-Jan-96 | 15-Feb-96 |
| Sample Type[1] | | GW | GW | GW | GW | GW | N | |
| VOCs[2,3] | MCL[4] | | | | | | | |
| Benzene | 1 | 0.27 | 0.21 | ND<0.09 | ND<0.09 | ND<0.50 | ND<0.09 | ND<0.09 |
| Bromodichloromethane | 100 [b] | ND<0.44 | ND<0.44 | ND<0.44 | ND<0.28 | ND<1.0 | ND<0.44 | ND<0.44 |
| n-Butylbenzene | -- | ND<0.16 | ND<0.16 | ND<0.16 | ND<0.11 | ND<1.0 | ND<0.16 | ND<0.16 |
| sec-Butylbenzene | -- | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 |
| tert-Butylbenzene | -- | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.15 | ND<0.15 |
| Carbon tetrachloride | 0.5 | 1.4 | 1.1 | ND<0.46 | ND<0.28 | 0.17J | ND<0.46 | ND<0.46 |
| Chlorobenzene | 70 | ND<0.47 | ND<0.47 | ND<0.47 | ND<0.14 | ND<1.0 | ND<0.47 | ND<0.47 |
| Chloroform | 100 [b] | 4.4 | 6.8 | 2.0 | 0.90 | 0.42J | ND<0.24 | ND<0.24 |
| Chloromethane | -- | ND<0.37 | ND<0.37 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 |
| 1,1-Dichloroethane | 5 | ND<0.19 | ND<0.19 | ND<0.19 | ND<0.19 | ND<1.0 | ND<0.19 | ND<0.19 |
| 1,2-Dichloroethane | 0.5 | 2.7 | 4.3 | 1.3 | 0.63 | 0.23J | ND<0.22 | ND<0.22 |
| 1,1-Dichloroethene | 6 | 1.0 | 1.6 | 0.30 | ND<0.21 | ND<1.0 | ND<0.21 | ND<0.21 |
| cis-1,2-Dichloroethene | 6 | 6.8 | 10 | 3.0 | 1.2 | 0.32J | ND<0.38 | ND<0.38 |
| trans-1,2-Dichloroethene | 10 | ND<0.17 | ND<0.17 | ND<0.17 | ND<0.17 | ND<1.0 | ND<0.17 | ND<0.17 |
| Methylene chloride | 40 [a] | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.29 | 0.61J | ND<0.29 | ND<0.29 |
| Propylbenzene | -- | ND<0.22 | 0.31 | ND<0.22 | ND<0.56 | ND<1.0 | ND<0.22 | ND<0.22 |
| Styrene | 100 | 0.36B | ND<0.13 | 0.30 | 0.17 | ND<1.0 | 0.23B | ND<0.13 |
| Tetrachloroethene | 5 | 85 | 140 | 29 | 14 | 7.1 | ND<0.29 | ND<0.29 |
| Toluene | 150 | 0.19 | 0.24 | 0.14 | ND<0.13 | ND<1.0 | ND<0.13 | ND<0.13 |
| 1,1,1-Trichloroethane | 200 | ND<0.26 | 0.63 | ND<0.26 | ND<0.26 | ND<1.0 | ND<0.26 | ND<0.26 |
| 1,1,2-Trichloroethane | 5 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 |
| Trichloroethene | 5 | 160 | 250 | 54 | 23 | 13 | ND<0.21 | ND<0.21 |
| Trichlorofluoromethane | 150 | ND<0.32 | ND<0.32 | ND<0.32 | ND<0.32 | ND<1.0 | ND<0.32 | ND<0.32 |
| 1,2,4-Trimethylbenzene | -- | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 |
| o-Xylene | 1,750 | ND<0.13 | ND<0.13 | ND<0.13 | ND<0.11 | ND<1.0 | ND<0.13 | ND<0.13 |
| p,m-Xylenes | 1,750 | ND<0.35 | ND<0.35 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.35 | ND<0.35 |

*Notes:*

All VOC concentrations are in µg/l.

[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
N = Equipment decontamination rinsate blank

[2] Only VOCs with detectable concentrations in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996.
All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).

[a] California Action Level
[b] Federal MCL
-- No Standard
B = Also detected in laboratory's method blank.
bgs = below ground surface
J = Result is estimated; value lies between the method detection and reporting limits.
ND = Not detected at a concentration greater than the limit indicated.
NA = Not analyzed.

Table 4-7
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-15

| Well ID | | MW51503 | | | | | |
|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | 235 - 245 | | | | | |
| Sample Date | | 9-Jul-96 | 9-Jul-96 | 13-Aug-96 | 13-Aug-96 | 23-Sep-96 | 23-Sep-96 |
| Sample Type[1] | | GW | K | GW | K | GW | K |
| VOCs[2,3] | MCL [4] | | | | | | |
| Benzene | 1 | ND<0.09 | ND<0.09 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 |
| n-Butylbenzene | -- | ND<0.11 | **0.14** | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Carbon tetrachloride | 0.5 | **0.33** | **0.33** | **0.23 J** | **0.30 J** | **0.45J** | **0.26J** |
| Chlorobenzene | 70 | ND<0.14 | ND<0.14 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Chloroform | 100 [b] | **1.0** | **0.93** | **0.76 J** | **0.92 J** | **1.4** | **1.1** |
| 1,1-Dichloroethane | 5 | **0.57** | **0.50** | **0.47 J** | **0.54 J** | **0.78J** | **0.60J** |
| 1,2-Dichloroethane | 0.5 | ND<0.22 | ND<0.22 | ND<0.50 | **0.32 J** | **0.39J** | **0.37J** |
| 1,1-Dichloroethene | 6 | **5.8** | **5.2** | **3.6** | **4.4** | **8.4** | **5.3** |
| cis-1,2-Dichloroethene | 6 | **13** | **11** | **9.5** | **12** | **15** | **13** |
| trans-1,2-Dichloroethene | 10 | ND<0.17 | ND<0.17 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Dichlorodifluoromethane | 1000 [a] | ND<0.4 | ND<0.4 | ND<1.0 | ND<1.0 | **0.21J** | ND<1.0 |
| Methylene chloride | 40 [a] | ND<0.29 | ND<0.29 | ND<2.0 | ND<2.0 | **1.8J** | **0.63J** |
| Styrene | 100 | ND<0.11 | **0.11** | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| 1,1,1,2-Tetrachloroethane | -- | ND<0.21 | ND<0.21 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Tetrachloroethene | 5 | **17** | **15** | **14** | **17** | **26** | **18** |
| Toluene | 150 | ND<0.13 | **0.18** | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | ND<0.26 | ND<0.26 | **0.18 J** | **0.22 J** | **0.44J** | **0.26J** |
| 1,1,2-Trichloroethane | 5 | ND<0.27 | ND<0.27 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Trichloroethene | 5 | **61** | **60** | **47** | **59** | **82** | **60** |
| o-Xylene | 1,750 | ND<0.11 | **0.12** | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Freon 113[5] | 1,200 | NA | NA | NA | NA | NA | ND<5.0 |
| EPA Method 300.0 | | | | | | | |
| Nitrate (as N) | 10 | **2.6** | **2.6** | **2.8** | **2.8** | **3.0** | **3.0** |
| Nitrite (as N) | 1.0 | ND<0.25 | ND<0.25 | ND<0.10 | ND<0.10 | ND<0.05 | ND<0.05 |

*Notes:*

**All VOC concentrations are reported in µg/l.**

**All concentrations for EPA method 300.0 are in mg/l.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- N = Equipment decontamination blank

[2] Only compounds detected in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to August 1996. All subsequent samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as 12/95)

[a] California Action Level

[b] Federal MCL

[5] Freon 113 is 1,1,2-Trichloro-1,2,2-trifluoroethane

-- No Standard

B = Also detected in laboratory's method blank.

bgs = below ground surface

J = Result is estimated; value lies between the method detection and reporting li

ND = Not detected at a concentration greater than the limit indicated.

NA = Not Analyzed.

**CDM** Camp Dresser & McKee
2581-112\sprdshts\5_15ALL.XLS
11/22/96

**Table 4-7**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-15

| Well ID | | MW51502 | | | MW51501 | | | MW51502N | MW51502N | MW51502N |
|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | 450-460 | | | 670 - 680 | | | -- | | |
| Sample Date | | 9-Jul-96 | 13-Aug-96 | 23-Sep-96 | 9-Jul-96 | 13-Aug-96 | 23-Sep-96 | 9-Jul-96 | 13-Aug-96 | 23-Sep-96 |
| Sample Type[1] | | GW | GW | GW | GW | GW | GW | N | N | N |
| VOCs[2,3] | MCL [4] | | | | | | | | | |
| Benzene | 1 | ND<0.09 | ND<0.50 | ND<0.50 | ND<0.09 | ND<0.50 | ND<0.50 | ND<0.09 | ND<0.50 | ND<0.50 |
| n-Butylbenzene | -- | 0.12 | ND<1.0 | ND<1.0 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.11 | ND<1.0 | ND<1.0 |
| Carbon tetrachloride | 0.5 | 1.2 | ND<0.50 | 0.83 | 0.91 | 1.1 | 0.6 | ND<0.28 | ND<0.50 | ND<0.50 |
| Chlorobenzene | 70 | ND<0.14 | ND<1.0 | ND<1.0 | ND<0.14 | ND<1.0 | ND<1.0 | ND<0.14 | ND<1.0 | ND<1.0 |
| Chloroform | 100 [b] | 3.5 | 2.5 J | 2.6 | 0.46 | 0.45 J | 0.43J | ND<0.24 | ND<1.0 | ND<1.0 |
| 1,1-Dichloroethane | 5 | 1.3 | ND<1.0 | 0.94J | ND<0.19 | ND<1.0 | ND<1.0 | ND<0.19 | ND<1.0 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | 1.5 | ND<0.50 | 1.6 | ND<0.22 | 0.42 J | 0.33J | ND<0.22 | ND<0.50 | ND<0.50 |
| 1,1-Dichloroethene | 6 | 25 | 20 | 13 | 0.32 | ND<1.0 | ND<1.0 | ND<0.21 | ND<1.0 | ND<1.0 |
| cis-1,2-Dichloroethene | 6 | 23 | 17 | 16 | 0.47 | ND<1.0 | ND<1.0 | ND<0.17 | ND<1.0 | ND<1.0 |
| trans-1,2-Dichloroethene | 10 | ND<0.17 | ND<1.0 | ND<1.0 | ND<0.17 | ND<1.0 | ND<1.0 | ND<0.17 | ND<1.0 | ND<1.0 |
| Dichlorodifluoromethane | 1000 [a] | ND<0.4 | ND<1.0 | 0.31J | ND<0.4 | ND<1.0 | ND<1.0 | ND<0.4 | ND<1.0 | ND<1.0 |
| Methylene chloride | 40 [a] | ND<0.29 | ND<2.0 | 0.48J | ND<2.0 | ND<2.0 | 1.2J | ND<0.29 | ND<2.0 | 1.3J |
| Styrene | 100 | 0.11 | ND<1.0 | ND<1.0 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.11 | ND<1.0 | ND<1.0 |
| 1,1,1,2-Tetrachloroethane | -- | ND<0.21 | ND<1.0 | ND<1.0 | ND<0.21 | ND<1.0 | ND<1.0 | ND<0.21 | ND<1.0 | ND<1.0 |
| Tetrachloroethene | 5 | 160 | 140 | 77 | 1.8 | 0.63 J | 0.57J | ND<0.29 | ND<1.0 | ND<1.0 |
| Toluene | 150 | 0.27 | ND<1.0 | ND<1.0 | ND<0.13 | ND<1.0 | ND<1.0 | 0.15 | ND<1.0 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | 8.7 | 5.8 J | 4 | ND<0.26 | ND<1.0 | ND<1.0 | ND<0.26 | ND<1.0 | ND<1.0 |
| 1,1,2-Trichloroethane | 5 | ND<0.27 | ND<1.0 | ND<1.0 | ND<0.27 | ND<1.0 | ND<1.0 | ND<0.27 | ND<1.0 | ND<1.0 |
| Trichloroethene | 5 | 250 | 240 | 140 | 11 | 13 | 9.9 | ND<0.21 | 0.35 J | 0.63J |
| o-Xylene | 1,750 | 0.16 | ND<1.0 | ND<1.0 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.11 | ND<1.0 | ND<1.0 |
| Freon 113[5] | 1,200 | NA | NA | 0.66J | NA | NA | ND<5.0 | NA | NA | ND<5.0 |
| **EPA Method 300.0** | | | | | | | | | | |
| Nitrate (as N) | 10 | 3.5 | 3.8 | 3.8 | 3.0 | 3.3 | 3.3 | NA | ND<0.10 | ND<0.05 |
| Nitrite (as N) | 1.0 | ND<0.25 | ND<0.10 | ND<0.05 | ND<0.25 | ND<0.10 | ND<0.05 | NA | ND<0.10 | ND<0.05 |

***Notes:***

**All VOC concentrations are reported in µg/l.**

**All concentrations for EPA method 300.0 are in mg/l.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- N = Equipment decontamination blank

[2] Only compounds detected in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to August 1996. All subsequent samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as 12/95)

[a] California Action Level

[b] Federal MCL

[5] Freon 113 is 1,1,2-Trichloro-1,2,2-trichloroethane

-- No Standard

B = Also detected in laboratory's method blank.

bgs = below ground surface

J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than the limit indicated.

NA = Not Analyzed.

**Table 4-8**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-17

| Well ID | | MW51703 | | | | | MW51702 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | 305 - 315 | | | | | 540 - 550 | | | | |
| Sample Date | | 30-Oct-95 | 30-Nov-95 | 15-Mar-96 | 24-Jun-96 | 20-Sep-96 | 30-Oct-95 | 30-Nov-95 | 15-Mar-96 | 24-Jun-96 | 20-Sep-96 |
| Sample Type[1] | | GW | | | | | GW | | | | |
| VOCs[2,3] | MCL[4] | | | | | | | | | | |
| Benzene | 1 | ND<0.20 | ND<0.20 | 0.15 | ND<0.09 | ND<0.50 | ND<0.20 | ND<0.20 | ND<0.09 | ND<0.09 | ND<0.50 |
| n-Butylbenzene | -- | ND<0.15 | ND<0.15 | ND<0.16 | 0.18 | ND<1.0 | ND<0.15 | ND<0.15 | ND<0.16 | ND<0.11 | ND<1.0 |
| Carbon tetrachloride | 0.5 | ND<0.64 | ND<0.64 | 0.47 | 0.43 | 0.27J | ND<0.64 | ND<0.64 | ND<0.46 | ND<0.28 | ND<0.50 |
| Chlorobenzene | 70 | ND<0.30 | ND<0.30 | 1.1 | 0.78 | ND<1.0 | ND<0.30 | ND<0.30 | ND<0.47 | ND<0.14 | ND<1.0 |
| Chloroform | 100 [b] | ND<0.20 | 0.21 | 2.2 | 0.97 | 0.32J | ND<0.20 | ND<0.20 | ND<0.24 | ND<0.24 | ND<1.0 |
| 1,1-Dichloroethane | 5 | ND<0.32 | ND<0.32 | 4.4 | 2.8 | 0.64J | ND<0.32 | ND<0.32 | ND<0.19 | ND<0.19 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | 0.92 | 1.0 | 18 | 8.6 | 1.8 | ND<0.14 | ND<0.14 | ND<0.22 | ND<0.22 | ND<0.50 |
| 1,1-Dichloroethene | 6 | 4.1 | 5.4 | 43 | 42 | 10 | ND<0.77 | ND<0.77 | ND<0.21 | ND<0.21 | ND<1.0 |
| cis-1,2-Dichloroethene | 6 | 11 | 13 | 180 | 110 | 29 | ND<0.47 | ND<0.47 | ND<0.38 | 0.28 | ND<1.0 |
| trans-1,2-Dichloroethene | 10 | ND<0.49 | ND<0.49 | 0.53 | 0.54 | 0.24J | ND<0.49 | ND<0.49 | ND<0.17 | ND<0.17 | ND<1.0 |
| 1,2-Dichloropropane | 5 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | 0.27J | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 |
| Methylene chloride | 40 [a] | ND<0.46 | ND<0.46 | ND<0.29 | 0.76 | 0.34J | ND<0.46 | ND<0.46 | ND<0.29 | ND<0.29 | 0.90J |
| Methyl tert-butyl ether | 35 [a] | NA | NA | NA | 1.4 | ND<5.0 | NA | NA | NA | ND<0.15 | ND<5.0 |
| 1,1,1,2-Tetrachloroethane | -- | ND<0.19 | ND<0.19 | 2.4 | 1.7 | ND<1.0 | ND<0.19 | ND<0.19 | ND<0.21 | ND<0.21 | ND<1.0 |
| Tetrachloroethene | 5 | 29 | 28 | 1,100 | 670 | 130 | 0.73 | 1.5 | 6.7 | 9.4 | 1.4 |
| Toluene | 150 | ND<0.22 | ND<0.22 | ND<0.13 | 0.20 | ND<1.0 | ND<0.22 | ND<0.22 | 0.15 | ND<0.13 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | 4.1 | 4.4 | 79 | 49 | 9.2 | ND<0.29 | ND<0.29 | ND<0.26 | ND<0.26 | ND<1.0 |
| 1,1,2-Trichloroethane | 5 | ND<0.20 | ND<0.20 | 2.4 | 1.7 | 0.34J | ND<0.20 | ND<0.20 | ND<0.27 | ND<0.27 | ND<1.0 |
| Trichloroethene | 5 | 10 | 11 | 280 | 140 | 33 | 0.40 | 1.0 | 6.4 | 8.4 | 1.6 |
| Trichlorofluoromethane | 150 | ND<0.48 | ND<0.48 | ND<0.32 | ND<0.32 | ND<1.0 | ND<0.48 | ND<0.48 | ND<0.32 | ND<0.32 | ND<1.0 |

***Notes:***

All VOC concentrations are in µg/l.

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- N = Equipment decontamination rinsate blank

[2] Only VOCs with detectable concentrations in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996.
All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).

[a] California Action Level
[b] Federal MCL
-- No Standard
B = Also detected in laboratory's method blank.
bgs = below ground surface
J = Result is estimated; value lies between the method detection and reporting limits.
ND = Not detected at a concentration greater than the limit indicated.
NA = Not analyzed.

**Table 4-8**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-17

| Well ID | | MW51701 | | | | | QC Samples MW51703N | MW51703N | MW51703N |
|---|---|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | 698 - 708 | | | | | -- | -- | -- |
| Sample Date | | 30-Oct-95 | 30-Nov-95 | 15-Mar-96 | 24-Jun-96 | 20-Sep-96 | 30-Oct-95 | 30-Nov-95 | 15-Mar-96 |
| Sample Type[1] | | GW | | | | | N | | |
| VOCs[2,3] | MCL[4] | | | | | | | | |
| Benzene | 1 | ND<0.20 | ND<0.20 | ND<0.09 | ND<0.09 | 0.19J | ND<0.20 | ND<0.20 | ND<0.09 |
| n-Butylbenzene | -- | ND<0.15 | ND<0.15 | ND<0.16 | ND<0.11 | ND<1.0 | ND<0.15 | ND<0.15 | ND<0.16 |
| Carbon tetrachloride | 0.5 | ND<0.64 | ND<0.64 | ND<0.46 | ND<0.28 | ND<0.50 | ND<0.64 | ND<0.64 | ND<0.46 |
| Chlorobenzene | 70 | ND<0.30 | ND<0.30 | ND<0.47 | ND<0.14 | ND<1.0 | ND<0.30 | ND<0.30 | ND<0.47 |
| Chloroform | 100 [b] | ND<0.20 | ND<0.20 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.20 | ND<0.20 | ND<0.24 |
| 1,1-Dichloroethane | 5 | ND<0.32 | ND<0.32 | ND<0.19 | ND<0.19 | ND<1.0 | ND<0.32 | ND<0.32 | ND<0.19 |
| 1,2-Dichloroethane | 0.5 | ND<0.14 | ND<0.14 | ND<0.22 | ND<0.22 | ND<0.50 | ND<0.14 | ND<0.14 | ND<0.22 |
| 1,1-Dichloroethene | 6 | ND<0.77 | ND<0.77 | ND<0.21 | 0.29 | ND<1.0 | ND<0.77 | ND<0.77 | ND<0.21 |
| cis-1,2-Dichloroethene | 6 | 1.4 | ND<0.47 | ND<0.38 | 0.50 | ND<1.0 | ND<0.47 | ND<0.47 | ND<0.38 |
| trans-1,2-Dichloroethene | 10 | ND<0.49 | ND<0.49 | ND<0.17 | ND<0.17 | ND<1.0 | ND<0.49 | ND<0.49 | ND<0.17 |
| 1,2-Dichloropropane | 5 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND0.24 |
| Methylene chloride | 40 [a] | ND<0.46 | ND<0.46 | ND<0.29 | ND<0.29 | 0.64J | ND<0.46 | ND<0.46 | ND<0.29 |
| Methyl tert-butyl ether | 35 [a] | NA | NA | NA | ND<0.15 | ND<5.0 | NA | NA | NA |
| 1,1,1,2-Tetrachloroethane | -- | ND<0.19 | ND<0.19 | ND<0.21 | ND<0.21 | ND<1.0 | ND<0.19 | ND<0.19 | ND<0.21 |
| Tetrachloroethene | 5 | 5.3 | ND<0.41 | 0.46 | 2.4 | 0.41J | ND<0.41 | ND<0.41 | ND<0.29 |
| Toluene | 150 | ND<0.22 | 0.22 | ND<0.13 | 0.13 | ND<1.0 | ND<0.22 | ND<0.22 | 0.15 |
| 1,1,1-Trichloroethane | 200 | 0.69 | ND<0.29 | ND<0.26 | ND<0.26 | ND<1.0 | ND<0.29 | ND<0.29 | ND<0.26 |
| 1,1,2-Trichloroethane | 5 | ND<0.20 | ND<0.20 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.20 | ND<0.20 | ND<0.27 |
| Trichloroethene | 5 | 1.8 | ND<0.33 | ND<0.21 | 0.67 | 0.29J | ND<0.33 | ND<0.33 | ND<0.21 |
| Trichlorofluoromethane | 150 | ND<0.48 | ND<0.48 | ND<0.32 | ND<0.32 | ND<1.0 | ND<0.48 | ND<0.48 | ND<0.32 |

***Notes:***

**All VOC concentrations are in µg/l.**

[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
N = Equipment decontamination rinsate blank

[2] Only VOCs with detectable concentrations in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996.
All other samples were analyzed for VOCs using EPA Method 8260.

[4] California Maximum Contaminant Level (as of 12/95).

[a] California Action Level
[b] Federal MCL
-- No Standard
B = Also detected in laboratory's method blank.
bgs = below ground surface
J = Result is estimated; value lies between the method detection and reporting limits.
ND = Not detected at a concentration greater than the limit indicated.
NA = Not analyzed.

**CDM** Camp Dresser & McKee



2581-112\SPRDSHT\5_17ALL.XLS
11/25/96

**Table 4-9**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
MW5-18

| Well ID | | MW51803 | | | MW51802 | | | MW51801 | | | QC Sample MW51803N |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | 500 - 510 | | | 630 - 640 | | | 780 - 790 | | | -- |
| Sample Date | | 3-Jun-96 | 9-Jul-96 | 23-Sep-96 | 3-Jun-96 | 9-Jul-96 | 23-Sep-96 | 3-Jun-96 | 9-Jul-96 | 23-Sep-96 | 3-Jun-96 |
| Sample Type[1] | | GW | GW | GW | GW | GW | GW | GW | GW | GW | N |
| VOCs[2,3] | MCL[3] | | | | | | | | | | |
| Benzene | 1 | **0.21** | **0.30** | **0.16J** | ND<0.090 | ND<0.09 | ND<0.50 | ND<0.090 | ND<0.09 | ND<0.50 | ND<0.090 |
| n-Butylbenzene | -- | ND<0.11 | **0.45** | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 |
| Carbon tetrachloride | 0.5 | **1.0** | **0.95** | **0.54** | **1.0** | **0.74** | **0.58** | **1.6** | **1.4** | **0.95** | ND<0.28 |
| Chlorobenzene | 70 | ND<0.14 | ND<0.14 | ND<1.0 | ND<0.14 | ND<0.14 | ND<1.0 | ND<0.14 | ND<0.14 | ND<1.0 | ND<0.14 |
| Chloroform | 100[b] | **3.6** | **2.6** | **1.6** | **0.77** | **0.56** | **0.56J** | **0.33** | ND<0.24 | **0.12J** | ND<0.24 |
| 1,1-Dichloroethane | 5 | **0.86** | **0.52** | **0.44J** | **0.19** | ND<0.19 | ND<1.0 | ND<0.19 | ND<0.19 | ND<1.0 | ND<0.19 |
| 1,2-Dichloroethane | 0.5 | **0.89** | **0.59** | **0.43J** | ND<0.22 | ND<0.22 | ND<0.50 | ND<0.22 | ND<0.22 | ND<0.50 | ND<0.22 |
| 1,1-Dichloroethene | 6 | **16** | **15** | **6.6** | **5.2** | **4.0** | **2.1** | **0.27** | ND<0.21 | ND<1.0 | ND<0.21 |
| cis-1,2-Dichloroethene | 6 | **12** | **9.6** | **6.9** | **5.8** | **5.2** | **4.5** | **0.43** | ND<0.17 | ND<1.0 | ND<0.17 |
| trans-1,2-Dichloroethene | 10 | ND<0.17 | ND<0.17 | ND<1.0 | ND<0.17 | ND<0.17 | ND<1.0 | ND<0.17 | ND<0.17 | ND<1.0 | ND<0.17 |
| 1,4-Dichlorobenzene | 5 | ND<0.27 | ND<0.27 | **0.22J** | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 |
| *Methylene chloride* | *40[a]* | ***0.51 B*** | *ND<0.29* | ***1.8J*** | *ND<0.29* | *ND<0.29* | ***1.4J*** | *ND<0.29* | *ND<0.29* | ***1.6J*** | *ND<0.29* |
| Styrene | 100 | ND<0.11 | **0.12** | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 |
| 1,1,1,2-Tetrachloroethane | -- | ND<0.21 | ND<0.21 | ND<1.0 | ND<0.21 | ND<0.21 | ND<1.0 | ND<0.21 | ND<0.21 | ND<1.0 | ND<0.21 |
| Tetrachloroethene | 5 | **240** | **220** | **110** | **240** | **230** | **140** | **15** | **2.3** | **0.61J** | ND<0.29 |
| Toluene | 150 | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.13 |
| 1,1,1-Trichloroethane | 200 | **3.2** | **2.8** | **1.3** | **1.1** | **0.68** | **0.39J** | ND<0.26 | ND<0.26 | ND<1.0 | ND<0.26 |
| 1,1,2-Trichloroethane | 5 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 |
| Trichloroethene | 5 | **280** | **240** | **130** | **320** | **310** | **240** | **18** | **2.3** | **1.6** | ND<0.22 |

***Notes:***
**All VOC concentrations are in μg/l.**
[1] *Sample Type:*
GW = Groundwater sample
K = Duplicate (split) sample
N = Equipment decontamination rinsate blank
[2] Only VOCs with detectable concentrations in one or more samples are listed.
[3] *VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996.*
All other samples were analyzed for VOCs using EPA Method 8260.
[4] California Maximum Contaminant Level (as of 12/95).

[a] *California Action Level*
[b] Federal MCL
-- No Standard
B = Also detected in laboratory's method blank.
bgs = below ground surface
J = Result is estimated; value lies between the method detection and reporting limits.
ND = Not detected at a concentration greater than the limit indicated.
NA = Not analyzed.

**CDM** Camp Dresser & McKee
2581-112\sprdshts\5_18ALL.XLS
11/22/96

**Table 4-10**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
Additional Existing Wells

| Well Owner | | ALRC/TMC | | | CalMat Co. | | | Cov. Irr. Co. | Glendora | | | | LA County | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well Recordation No. | | 11900038 | | | 01902920 | | | 01900882 | 019000831 | | | | 08000070 | | | |
| Well Status | | Active | | | Active | | | Active | Inactive | | | | Active | | | |
| Well Name | | MW-4/AZ-2 | | | E-Durbin | | | Baldwin 3 | 7G | | | | Santa Fe 1 | | | |
| Screen Interval (feet bgs) | | 350-614 | | | 238-314 366-484 | | | 198-251 278-484 | 252-474 | | | --- | 290-435 | | | --- |
| Sampler | | GeoSyntec | GeoSyntec | GeoSyntec | CDM | CDM | CDM | CDM | GeoSyntec | CDM | CDM | CDM | CDM | CDM | CDM | CDM |
| Sample Date | | 12-Mar-96 | 10-Jun-96 | 12-Sep-96 | 10-Apr-96 | 27-Jun-96 | 27-Sep-96 | 17-Oct-96 | 27-Mar-96 | 2-Jul-96 | 24-Sep-96 | 2-Jul-96 | 15-Mar-96 | 27-Jun-96 | 20-Sep-96 | 27-Jun-96 |
| Sample Type[1] | | GW | | | GW | | | GW | GW | GW | GW | F | GW | GW | GW | F |
| VOCs [2,4] | MCL[3] | | | | | | | | | | | | | | | |
| Acetone | -- | ND<1.25 | ND<1.25 | ND<1.25 | NA | NA | NA | NA | ND<1.25 | NA | NA | NA | NA | NA | NA | NA |
| Benzene | 1 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.09 | ND<0.09 | ND<0.5 | **2.0** | ND<0.5 | ND<0.09 | ND<0.5 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.5 | ND<0.09 |
| Bromodichloromethane | 100 [b] | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.44 | ND<0.28 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.28 | ND<1.0 | ND<0.28 | ND<0.44 | ND<0.28 | ND<1.0 | ND<0.28 |
| n-Butylbenzene | -- | NA | NA | NA | ND<0.16 | ND<0.11 | ND<1.0 | ND<1.0 | NA | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.16 | ND<0.11 | ND<1.0 | ND<0.11 |
| sec-Butylbenzene | -- | NA | NA | NA | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 | NA | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 |
| tert-Butylbenzene | -- | NA | NA | NA | ND<0.15 | ND<0.15 | ND<1.0 | ND<1.0 | NA | ND<0.15 | ND<1.0 | ND<0.15 | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.15 |
| Carbon tetrachloride | 0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.46 | ND<0.28 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.28 | ND<0.5 | ND<0.28 | ND<0.46 | ND<0.28 | ND<0.5 | ND<0.28 |
| Chlorobenzene | 70 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.47 | ND<0.14 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.14 | ND<1.0 | ND<0.14 | ND<0.47 | ND<0.14 | ND<1.0 | ND<0.14 |
| Chloroethane | -- | ND<0.75 | ND<0.75 | ND<0.75 | ND<0.24 | ND<0.24 | ND<1.0 | ND<1.0 | ND<0.75 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 |
| Chloroform | 100 [b] | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.24 | ND<0.24 | ND<1.0 | **0.19J** | ND<0.5 | ND<0.24 | **0.14J** | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 |
| Dibromochloromethane | 100 [b] | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.24 | ND<0.24 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 |
| 1,2-Dibromoethane | -- | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.23 | ND<0.23 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.23 | ND<1.0 | ND<0.23 | ND<0.23 | ND<0.23 | ND<1.0 | ND<0.23 |
| 1,2-Dichlorobenzene | 600 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.27 | ND<0.27 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 |
| 1,3-Dichlorobenzene | 130 [a] | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.18 | ND<0.18 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.18 | ND<1.0 | ND<0.18 | ND<0.18 | ND<0.18 | ND<1.0 | ND<0.18 |
| 1,4-Dichlorobenzene | 5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.27 | ND<0.27 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 |
| Dichlorodifluoromethane | 1,000 [b] | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.4 | ND<0.4 | ND<1.0 | **0.54J** | ND<0.5 | ND<0.4 | **0.21J** | ND<0.4 | ND<0.4 | ND<0.4 | ND<1.0 | ND<0.4 |
| 1,1-Dichloroethane | 5 | **4.2** | **4.0** | **4.3** | ND<0.19 | ND<0.19 | ND<1.0 | **0.16J** | **0.7** | ND<0.19 | **0.22J** | ND<0.19 | ND<0.19 | ND<0.19 | ND<1.0 | ND<0.19 |
| 1,2-Dichloroethane | 0.5 | ND<0.5 | ND<0.5 | **0.8** | **1.40** | ND<0.22 | ND<0.5 | ND<0.5 | **2.5** | **0.62** | ND<0.5 | ND<0.22 | ND<0.22 | ND<0.22 | ND<0.5 | ND<0.22 |
| 1,1-Dichloroethene | 6 | **272** | **294** | **252** | ND<0.21 | ND<0.21 | ND<1.0 | ND<1.0 | **73.7** | **27** | **20** | ND<0.21 | ND<0.21 | ND<0.21 | ND<1.0 | ND<0.21 |
| cis-1,2-Dichloroethene | 6 | **1.1** | **1.1** | **1.2** | ND<0.38 | ND<0.17 | ND<1.0 | **0.16J** | ND<0.5 | ND<0.17 | ND<1.0 | ND<0.17 | ND<0.38 | ND<0.17 | ND<1.0 | ND<0.17 |
| trans-1,2-Dichloroethene | 10 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.17 | ND<0.17 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.17 | **0.29J** | ND<0.17 | ND<0.17 | ND<0.17 | ND<1.0 | ND<0.17 |
| Isopropylbenzene | -- | NA | NA | NA | ND<0.09 | ND<0.09 | ND<1.0 | ND<1.0 | NA | ND<0.09 | ND<1.0 | ND<0.09 | ND<0.09 | ND<0.09 | ND<1.0 | ND<0.09 |
| Methylene chloride | 40 [a] | ND<0.5 | ND<0.5 | ND<0.5 | **1.5B** | ND<0.29 | **2.1** | **0.27JB** | ND<0.5 | ND<0.29 | **0.32J** | ND<0.29 | ND<0.29 | ND<0.29 | ND<2.0 | ND<0.29 |
| 1-Methylethylbenzene | -- | NA | NA | NA | NA | NA | ND<1.0 | ND<1.0 | NA | NA | ND<1.0 | NA | NA | NA | ND<1.0 | ND<5.0 |
| Naphthalene | -- | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.37 | ND<0.37 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 |
| n-Propylbenzene | -- | ND<1.0 | ND<1.0 | NA | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Styrene | 100 | ND<0.75 | ND<0.75 | ND<0.75 | ND<0.13 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.75 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.13 | ND<0.11 | ND<1.0 | ND<0.11 |
| 1,1,1,2-Tetrachloroethane | -- | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.21 | ND<0.21 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.21 | ND<1.0 | ND<0.21 | ND<0.21 | ND<0.21 | ND<1.0 | ND<0.21 |
| Tetrachloroethene | 5 | **14.6** | ND<0.5 | **8.2** | **3.7** | **2.6** | **2.3** | **0.44J** | **3.4** | **2.8** | **1.9** | ND<0.29 | **2.9** | **0.95** | **0.21J** | ND<0.29 |
| Tetrahydrofuran | -- | ND<0.5 | **15.3** | **4.7** | NA | NA | NA | NA | ND<0.5 | NA | NA | NA | NA | NA | NA | NA |
| Toluene | 150 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.13 | **0.13** | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.13 | ND<1.0 | ND<0.13 | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.13 |
| 1,1,1-Trichloroethane | 200 | **192** | **251** | **239** | ND<0.26 | ND<0.26 | ND<1.0 | ND<1.0 | **267** | **120** | **70** | ND<0.26 | ND<0.26 | ND<0.26 | ND<1.0 | ND<0.26 |
| 1,1,2-Trichloroethane | 5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.27 | ND<0.27 | ND<1.0 | ND<1.0 | **1.2** | ND<0.27 | **0.24J** | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 |
| Trichloroethene | 5 | **71.4** | **92** | **86** | **0.92** | **0.31** | **0.98J** | **2.0** | **7.6** | **3.4** | **2.4** | ND<0.21 | **17** | **5.5** | **1.0** | ND<0.21 |
| Trichlorofluoromethane | 150 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.32 | ND<0.32 | ND<1.0 | **0.32JB** | ND<0.5 | ND<0.32 | ND<1.0 | ND<0.32 | ND<0.32 | ND<0.32 | ND<1.0 | ND<0.32 |
| 1,2,4-Trimethylbenzene | -- | NA | NA | NA | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 | NA | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 |
| 1,3,5-Trimethylbenzene | -- | NA | NA | NA | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 | NA | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 |
| Freon 113[5] | 1,200 | NA | NA | NA | NA | NA | ND<5.0 | ND<5.0 | NA | NA | ND<5.0 | NA | NA | NA | ND<5.0 | NA |
| Vinyl acetate | -- | ND<1.25 | ND<1.25 | ND<0.5 | NA | NA | NA | NA | ND<1.25 | NA | NA | NA | NA | NA | NA | NA |
| Vinyl chloride | 0.5 | ND<0.5 | ND<0.5 | **0.5** | ND<0.2 | ND<0.2 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.2 | ND<0.5 | ND<0.2 | ND<0.2 | ND<0.2 | ND<0.5 | ND<0.2 |
| o-Xylene | 1,750 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.13 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.13 | ND<0.11 | ND<1.0 | ND<0.11 |
| p,m-Xylenes | 1,750 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.35 | ND<0.35 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.35 | ND<1.0 | ND<0.35 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.35 |
| Nitrate (as N) | 10 | **14.9** | **11.7** | **11.6** | **1.6** | NA | **1.5** | **2.4** | **4.5** | NA | **17.7** | NA | **3.1** | NA | NA | NA |
| Nitrite (as N) | 1 | NA | NA | NA | ND<0.25 | NA | ND<0.05 | ND<1.0 | NA | NA | ND<0.05 | NA | ND<0.25 | NA | NA | NA |

***Notes:***

**VOC concentrations are in µg/l.**

**Nitrate/Nitrite concentrations are in mg/l.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- F = Field blank
- NS = No sample collected

[2] Only compounds detected in one or more samples are listed.

[3] California Maximum Contaminant Level (as of 12/95)

[a] California Action Level

[b] Federal MCL

[4] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996 by CDM;
All other samples were analyzed for VOCs using EPA Method 8260 by CDM
VOCs analyzed by EPA method 8260 for samples collected by GeoSyntec.
VOCs analyzed by EPA method 524.2 for samples collected by Stetson Engineers

[5] Freon 113 is 1,1,2-Trichloro-1,2,2-trifluoroethane

-- No Standard

B = Contaminant also detected in laboratory's method blank.

J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than the limit indicated.

NA = Not analyzed

MW = Monitoring Well

bgs = below ground surface

Well Status:
- Active = Active Water Supply Well
- Inactive = Inactive Water Supply Well

Table 4-10
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
Additional Existing Wells

| Well Owner | | La Puente Valley County Water District | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well Recordation No. | | 01901460 | | | 01902859 | | | 08000062 | | | | 01902859 | 01902859 |
| Well Status | | Active | | | Active | | | Active | | | | Active | Active |
| Well Name | | 2 | | | 3 | | | 4 | | | | 3 | 3 |
| Screen Interval (feet bgs) | | 600-947 | | | 620-770 | | | 550-725 | | | | -- | -- |
| Sampler | | CDM | Stetson | CDM | CDM | Stetson | CDM | CDM | Stetson | CDM | CDM | CDM | CDM |
| Sample Date | | 10-Apr-96 | 1-Jul-96 | 11-Oct-96 | 10-Apr-96 | 1-Jul-96 | 11-Oct-96 | 10-Apr-96 | 1-Jul-96 | 11-Oct-96 | 11-Oct-96 | 10-Apr-96 | 11-Oct-96 |
| Sample Type[1] | | GW | | | GW | | | GW | GW | GW | K | F | |
| VOCs [2,4] | MCL[3] | | | | | | | | | | | | |
| Acetone | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzene | 1 | ND<0.09 | ND<0.5 | ND<0.5 | ND<0.09 | ND<0.5 | ND<0.5 | ND<0.09 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.09 | ND<0.5 |
| Bromodichloromethane | 100 [b] | ND<0.44 | ND<0.5 | ND<1.0 | ND<0.44 | ND<0.5 | ND<1.0 | ND<0.44 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.44 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.16 | ND<0.5 | ND<1.0 | ND<0.16 | ND<0.5 | ND<1.0 | ND<0.16 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.16 | ND<1.0 |
| sec-Butylbenzene | -- | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.11 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.15 | ND<0.5 | ND<1.0 | ND<0.15 | ND<0.5 | ND<1.0 | ND<0.15 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.15 | ND<1.0 |
| Carbon tetrachloride | 0.5 | **2.4** | **5.6** | **2.3** | **3.2** | **4.0** | **2.5** | **5.5** | **5.0** | **5.3** | **5.3** | ND<0.46 | ND<0.5 |
| Chlorobenzene | 70 | ND<0.47 | ND<0.5 | ND<1.0 | ND<0.47 | ND<0.5 | ND<1.0 | ND<0.47 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.47 | ND<1.0 |
| Chloroethane | -- | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.24 | ND<1.0 |
| Chloroform | 100 [b] | **1.2** | **2.4** | **0.92J** | **2.0** | **1.6** | **1.6** | **4.0** | **2.7** | **3.6** | **3.4** | ND<0.24 | ND<1.0 |
| Dibromochloromethane | 100 [b] | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.24 | ND<1.0 |
| 1,2-Dibromoethane | -- | ND<0.23 | NA | ND<1.0 | ND<0.23 | NA | ND<1.0 | ND<0.23 | NA | ND<1.0 | ND<1.0 | ND<0.23 | ND<1.0 |
| 1,2-Dichlorobenzene | 600 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.27 | ND<1.0 |
| 1,3-Dichlorobenzene | 130 [a] | ND<0.18 | ND<0.5 | ND<1.0 | ND<0.18 | ND<0.5 | ND<1.0 | ND<0.18 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.18 | ND<1.0 |
| 1,4-Dichlorobenzene | 5 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.27 | ND<1.0 |
| Dichlorodifluoromethane | 1,000 [b] | **1.2** | ND<1.0 | **0.63J** | **2.2** | ND<1.0 | **1.5** | **2.4** | ND<1.0 | **2.0** | **2.0** | ND<0.4 | ND<1.0 |
| 1,1-Dichloroethane | 5 | ND<0.19 | ND<0.5 | ND<1.0 | ND<0.19 | ND<0.5 | **0.16J** | ND<0.19 | ND<0.5 | **0.27J** | **0.26J** | ND<0.19 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | **1.9** | **4.6** | **1.5** | **4.1** | **3.1** | **2.8** | **8.0** | **5.8** | **6.2** | **6.1** | ND<0.22 | ND<0.5 |
| 1,1-Dichloroethene | 6 | **0.34** | ND<0.5 | **0.39J** | **0.35** | ND<0.5 | **0.44J** | **0.92** | ND<0.5 | **1.6** | **1.6** | ND<0.21 | ND<1.0 |
| cis-1,2-Dichloroethene | 6 | **0.71** | ND<0.5 | **0.74J** | **0.97** | ND<0.5 | **0.90J** | **2.4** | ND<0.5 | **2.8** | **2.9** | ND<0.38 | ND<1.0 |
| trans-1,2-Dichloroethene | 10 | ND<0.17 | ND<0.5 | ND<1.0 | ND<0.17 | ND<0.5 | ND<1.0 | ND<0.17 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.17 | ND<1.0 |
| Isopropylbenzene | -- | ND<0.09 | ND<0.5 | ND<1.0 | ND<0.09 | ND<0.5 | ND<1.0 | ND<0.09 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.09 | ND<1.0 |
| *Methylene chloride* | 40 [a] | **0.84B** | *ND<0.5* | *ND<2.0* | **0.80B** | *ND<0.5* | *ND<2.0* | **0.96B** | *ND<0.5* | *ND<2.0* | *ND<2.0* | **1.0B** | *ND<2.0* |
| 1-Methylethylbenzene | -- | NA | NA | ND<1.0 | NA | NA | ND<1.0 | NA | NA | ND<1.0 | ND<1.0 | NA | ND<1.0 |
| Naphthalene | -- | ND<0.37 | ND<0.5 | ND<1.0 | ND<0.37 | ND<0.5 | ND<1.0 | ND<0.37 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.37 | ND<1.0 |
| n-Propylbenzene | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Styrene | 100 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.13 | ND<1.0 |
| 1,1,1,2-Tetrachloroethane | -- | ND<0.21 | ND<0.5 | ND<1.0 | ND<0.21 | ND<0.5 | ND<1.0 | ND<0.21 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.21 | ND<1.0 |
| Tetrachloroethene | 5 | **1.5** | **3.7** | **1.4** | **2.2** | **2.2** | **2.0** | **4.1** | **3.4** | **5.0** | **5.0** | ND<0.29 | ND<1.0 |
| Tetrahydrofuran | -- | *NA* | *NA* | *NA* | *NA* | *NA* | *NA* | *NA* | *NA* | *NA* | *NA* | *NA* | *NA* |
| Toluene | 150 | **0.13** | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.13 | **0.079J** |
| 1,1,1-Trichloroethane | 200 | ND<0.26 | ND<0.5 | ND<1.0 | ND<0.26 | ND<0.5 | ND<1.0 | ND<0.26 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.26 | ND<1.0 |
| 1,1,2-Trichloroethane | 5 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.27 | ND<1.0 |
| Trichloroethene | 5 | **25** | **55** | **25** | **39** | **50** | **45** | **82** | **57** | **92** | **90** | ND<0.21 | ND<1.0 |
| Trichlorofluoromethane | 150 | ND<0.32 | ND<0.5 | ND<1.0 | ND<0.32 | ND<0.5 | ND<1.0 | ND<0.32 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.32 | ND<1.0 |
| 1,2,4-Trimethylbenzene | -- | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.11 | ND<1.0 |
| 1,3,5-Trimethylbenzene | -- | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.11 | ND<1.0 |
| Freon 113[5] | 1,200 | NA | NA | ND<5.0 | NA | NA | ND<5.0 | NA | NA | ND<5.0 | ND<5.0 | NA | ND<5.0 |
| Vinyl acetate | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Vinyl chloride | 0.5 | ND<0.2 | ND<0.5 | ND<0.5 | ND<0.2 | ND<0.5 | ND<0.5 | ND<0.2 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.20 | ND<0.5 |
| o-Xylene | 1,750 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.13 | ND<1.0 |
| p,m-Xylenes | 1,750 | ND<0.35 | ND<0.5 | ND<1.0 | ND<0.35 | ND<0.5 | ND<1.0 | ND<0.35 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.35 | ND<1.0 |
| Nitrate (as N) | 10 | **3.1** | **5.5** | **3.5** | **5.4** | **5.4** | **6.0** | **5.8** | **5.3** | **5.1** | **5.1** | NA | NA |
| Nitrite (as N) | 1 | ND<0.25 | NA | ND<0.05 | ND<0.25 | NA | ND<0.05 | ND<0.25 | NA | ND<0.05 | ND<0.05 | NA | NA |

***Notes:***

**VOC concentrations are in µg/l.**

**Nitrate/Nitrite concentrations are in mg/l.**

[1] Sample Type:
GW = Groundwater sample
*K = Duplicate (split) sample*
F = Field blank
NS = No sample collected

[2] Only compounds detected in one or more samples are listed.

[3] California Maximum Contaminant Level (as of 12/95)

[a] California Action Level

[b] Federal MCL

[4] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996 by CDM;
All other samples were analyzed for VOCs using EPA Method 8260 by CDM
*VOCs analyzed by EPA method 8260 for samples collected by GeoSyntec.*
VOCs analyzed by EPA method 524.2 for samples collected by Stetson Engineers

[5] Freon 113 is 1,1,2-Trichloro-1,2,2-trifluoroethane

-- No Standard

B = Contaminant also detected in laboratory's method blank.

J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than limit indicated.
NA = Not analyzed
MW = Monitoring Well
*bgs = below ground surface*
Well Status:
Active = Active Water Supply Well
Inactive = Inactive Water Supply Well

**Table 4-10**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
Additional Existing Wells

| Well Owner | | San Gabriel Valley Water Company | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well Recordation No. | | 51902858 | | | 71903093 | | | 78000098 | | | 51902858 | 78000098 | 51902858 |
| Well Status | | Active | | | Active | | | Active | | | Active | Active | Active |
| Well Name | | B4B | | | B6C | | | B6D | | | B4B | B6D | B4B |
| Screen Interval (feet bgs) | | 920-940, 950-1154 | | | 275-420, 440-465, 480-506 | | | 760-1032 | | | — | — | — |
| Sampler | | CDM | Stetson | CDM | CDM | Stetson | CDM | CDM | Stetson | CDM | CDM | CDM | CDM |
| Sample Date | | 2-Apr-96 | 18-Jul-96 | 9-Oct-96 | 2-Apr-96 | 17-Jul-96 | 8-Oct-96 | 2-Apr-96 | 17-Jul-96 | 8-Oct-96 | 2-Apr-96 | 8-Oct-96 | 9-Oct-96 |
| Sample Type[1] | | GW | | | GW | | | GW | | | F | | |
| VOCs [2,4] | MCL[3] | | | | | | | | | | | | |
| Acetone | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzene | 1 | ND<0.09 | ND<0.5 | ND<0.5 | ND<0.09 | ND<0.5 | ND<0.5 | ND<0.09 | ND<0.5 | ND<0.5 | ND<0.09 | ND<0.5 | ND<0.5 |
| Bromodichloromethane | 100 [b] | ND<0.44 | ND<0.5 | ND<1.0 | ND<0.44 | ND<0.5 | ND<1.0 | ND<0.44 | ND<0.5 | ND<1.0 | ND<0.44 | ND<1.0 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.16 | ND<0.5 | ND<1.0 | ND<0.16 | ND<0.5 | ND<1.0 | ND<0.16 | ND<0.5 | ND<1.0 | ND<0.16 | ND<1.0 | ND<1.0 |
| sec-Butylbenzene | -- | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<1.0 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.15 | ND<0.5 | ND<1.0 | ND<0.15 | ND<0.5 | ND<1.0 | ND<0.15 | ND<0.5 | ND<1.0 | ND<0.15 | ND<1.0 | ND<1.0 |
| Carbon tetrachloride | 0.5 | **2.8** | **2.5** | **2.1** | **2.5** | **3.6** | **1.4** | **6.5** | **5.3** | **4.2** | ND<0.46 | ND<0.5 | ND<0.5 |
| Chlorobenzene | 70 | ND<0.47 | ND<0.5 | ND<1.0 | ND<0.47 | ND<0.5 | ND<1.0 | ND<0.47 | ND<0.5 | ND<1.0 | ND<0.47 | ND<1.0 | ND<1.0 |
| Chloroethane | -- | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<1.0 | ND<1.0 |
| Chloroform | 100 [b] | ND<0.24 | ND<0.5 | ND<1.0 | **3.4** | **3.1** | **2.9** | ND<0.24 | ND<0.5 | **0.27J** | ND<0.24 | ND<1.0 | ND<1.0 |
| Dibromochloromethane | 100 [b] | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<1.0 | ND<1.0 |
| 1,2-Dibromoethane | -- | ND<0.23 | NA | ND<1.0 | ND<0.23 | NA | ND<1.0 | ND<0.23 | NA | ND<1.0 | ND<0.23 | ND<1.0 | ND<1.0 |
| 1,2-Dichlorobenzene | 600 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<1.0 | ND<1.0 |
| 1,3-Dichlorobenzene | 130 [a] | ND<0.18 | ND<0.5 | ND<1.0 | ND<0.18 | ND<0.5 | ND<1.0 | ND<0.18 | ND<0.5 | ND<1.0 | ND<0.18 | ND<1.0 | ND<1.0 |
| 1,4-Dichlorobenzene | 5 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<1.0 | ND<1.0 |
| Dichlorodifluoromethane | 1,000 [b] | ND<0.4 | ND<1.0 | ND<1.0 | **4.5** | ND<1.0 | **1.8** | ND<0.4 | ND<1.0 | ND<1.0 | ND<0.4 | ND<1.0 | ND<1.0 |
| 1,1-Dichloroethane | 5 | ND<0.19 | ND<0.5 | ND<1.0 | **0.95** | **0.79** | **0.70J** | ND<0.19 | ND<0.5 | ND<1.0 | ND<0.19 | ND<1.0 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | ND<0.22 | ND<0.5 | ND<0.5 | **5.0** | **4.6** | **3.9** | ND<0.22 | ND<0.5 | ND<0.5 | **0.85** | ND<0.5 | ND<0.5 |
| 1,1-Dichloroethene | 6 | ND<0.21 | ND<0.5 | ND<1.0 | **0.99** | **0.99** | **0.72J** | ND<0.21 | ND<0.5 | ND<1.0 | ND<0.21 | ND<1.0 | ND<1.0 |
| cis-1,2-Dichloroethene | 6 | ND<0.38 | ND<0.5 | ND<1.0 | **2.9** | **2.7** | **2.3** | ND<0.38 | ND<0.5 | ND<1.0 | ND<0.38 | ND<1.0 | ND<1.0 |
| trans-1,2-Dichloroethene | 10 | ND<0.17 | ND<0.5 | ND<1.0 | ND<0.17 | ND<0.5 | ND<1.0 | ND<0.17 | ND<0.5 | ND<1.0 | ND<0.17 | ND<1.0 | ND<1.0 |
| *Isopropylbenzene* | -- | *ND<0.09* | *ND<0.5* | *ND<1.0* | *ND<0.09* | *ND<0.5* | *ND<1.0* | *ND<0.09* | ND<0.5 | ND<1.0 | ND<0.09 | ND<1.0 | ND<1.0 |
| Methylene chloride | 40 [a] | **0.54** | ND<0.5 | ND<2.0 | **0.92B** | ND<0.5 | ND<2.0 | **0.49** | ND<0.5 | ND<2.0 | **0.97** | ND<2.0 | ND<2.0 |
| 1-Methylethylbenzene | -- | NA | NA | ND<1.0 | NA | NA | NA | NA | ND<1.0 | ND<1.0 | NA | ND<1.0 | ND<1.0 |
| Naphthalene | -- | ND<0.37 | ND<0.5 | ND<1.0 | ND<0.37 | ND<0.5 | ND<1.0 | ND<0.37 | ND<0.5 | ND<1.0 | ND<0.37 | ND<1.0 | ND<1.0 |
| n-Propylbenzene | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Styrene | 100 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<1.0 | ND<1.0 |
| 1,1,1,2-Tetrachloroethane | -- | ND<0.21 | ND<0.5 | ND<1.0 | ND<0.21 | ND<0.5 | ND<1.0 | ND<0.21 | ND<0.5 | ND<1.0 | ND<0.21 | ND<1.0 | ND<1.0 |
| Tetrachloroethene | 5 | ND<0.29 | ND<0.5 | ND<1.0 | **6.3** | **5.6** | **4.1** | ND<0.29 | ND<0.5 | ND<1.0 | ND<0.29 | ND<1.0 | ND<1.0 |
| Tetrahydrofuran | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND<1.0 | ND<1.0 |
| Toluene | 150 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | **0.087J** | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | ND<0.26 | ND<0.5 | ND<1.0 | ND<0.26 | ND<0.5 | ND<1.0 | ND<0.26 | ND<0.5 | ND<1.0 | ND<0.26 | ND<1.0 | ND<1.0 |
| 1,1,2-Trichloroethane | 5 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<1.0 | ND<1.0 |
| Trichloroethene | 5 | ND<0.21 | ND<0.5 | ND<1.0 | **61** | **37** | **41** | **1.4** | **1.1** | **1.1** | ND<0.21 | ND<1.0 | ND<1.0 |
| Trichlorofluoromethane | 150 | ND<0.32 | ND<0.5 | ND<1.0 | ND<0.32 | ND<0.5 | ND<1.0 | ND<0.32 | ND<0.5 | ND<1.0 | ND<0.32 | ND<1.0 | ND<1.0 |
| 1,2,4-Trimethylbenzene | -- | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<1.0 | ND<1.0 |
| 1,3,5-Trimethylbenzene | -- | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<1.0 | ND<1.0 |
| Freon 113[5] | 1,200 | NA | NA | ND<5.0 | NA | NA | ND<5.0 | NA | NA | ND<5.0 | NA | ND<5.0 | ND<5.0 |
| Vinyl acetate | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Vinyl chloride | 0.5 | ND<0.2 | ND<0.5 | ND<0.5 | ND<0.2 | ND<0.5 | ND<0.5 | ND<0.2 | ND<0.5 | ND<0.5 | ND<0.2 | ND<0.5 | ND<0.5 |
| o-Xylene | 1,750 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<1.0 | ND<1.0 |
| p,m-Xylenes | 1,750 | ND<0.35 | ND<0.5 | ND<1.0 | ND<0.35 | ND<0.5 | ND<1.0 | ND<0.35 | ND<0.5 | ND<1.0 | ND<0.35 | ND<1.0 | ND<1.0 |
| Nitrate (as N) | 10 | **1.1** | **1.4** | **1.1** | **10** | **10.4** | **10.1** | **1.9** | **1.9** | **2.0** | NA | NA | NA |
| Nitrite (as N) | 1 | ND<0.25 | NA | ND<0.05 | ND<0.25 | NA | ND<0.05 | ND<0.25 | NA | ND<0.05 | NA | NA | NA |

***Notes:***

**VOC concentrations are in µg/l.**
**Nitrate/Nitrite concentrations are in mg/l.**
[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
F = Field blank
NS = No sample collected
[2] *Only compounds detected in one or more samples are listed.*
[3] California Maximum Contaminant Level (as of 12/95)

[a] California Action Level
[b] Federal MCL
[4] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996 by CDM;
All other samples were analyzed for VOCs using EPA Method 8260 by CDM
VOCs analyzed by EPA method 8260 for samples collected by GeoSyntec.
VOCs analyzed by EPA method 524.2 for samples collected by Stetson Engineers
[5] Freon 113 is 1,1,2-Trichloro-1,2,2-trifluoroethane
-- No Standard
B = Contaminant also detected in laboratory's method blank.
J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than limit indicated.
NA = Not analyzed
MW = Monitoring Well
bgs = below ground surface
Well Status:
Active = Active Water Supply Well
Inactive = Inactive Water Supply Well

Table 4-10
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
Additional Existing Wells

| Well Owner | | Suburban Water Systems | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well Recordation No. | | 01901598 | | | 08000069 | | | 08000095 | | | 08000095 | 08000069 |
| Well Status | | Active | | | Active | | | Active | | | Active | Active |
| Well Name | | 139W1 | | | 139W4 | | | 139W5 | | | 139W5 | 139W4 |
| Screen Interval (feet bgs) | | 120-349 | | | 566-642, 676-695, 787-825 | | | 750-1060 | | | --- | --- |
| Sampler | | CDM | Stetson | CDM | CDM | Stetson | CDM | CDM | Stetson | CDM | CDM | CDM |
| Sample Date | | 12-Apr-96 | 3-Jul-96 | 7-Oct-96 | 12-Apr-96 | 3-Jul-96 | 7-Oct-96 | 12-Apr-96 | 3-Jul-96 | 7-Oct-96 | 12-Apr-96 | 7-Oct-96 |
| Sample Type[1] | | GW | | | GW | | | GW | | | F | |
| VOCs [2,4] | MCL[3] | | | | | | | | | | | |
| Acetone | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzene | 1 | ND<0.09 | ND<0.5 | ND<0.5 | ND<0.09 | ND<0.5 | ND<0.5 | ND<0.09 | ND<0.5 | ND<0.5 | ND<0.09 | ND<0.5 |
| Bromodichloromethane | 100 [b] | ND<0.44 | ND<0.5 | ND<1.0 | ND<0.44 | ND<0.5 | ND<1.0 | ND<0.44 | ND<0.5 | ND<1.0 | ND<0.44 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.16 | ND<0.5 | ND<1.0 | ND<0.16 | ND<0.5 | ND<1.0 | ND<0.16 | ND<0.5 | ND<1.0 | ND<0.16 | ND<1.0 |
| sec-Butylbenzene | -- | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.15 | ND<0.5 | ND<1.0 | ND<0.15 | ND<0.5 | ND<1.0 | ND<0.15 | ND<0.5 | ND<1.0 | ND<0.15 | ND<1.0 |
| Carbon tetrachloride | 0.5 | ND<0.46 | ND<0.5 | ND<0.5 | ND<0.46 | ND<0.5 | ND<0.5 | ND<0.46 | ND<0.5 | ND<0.5 | ND<0.46 | ND<0.5 |
| Chlorobenzene | 70 | ND<0.47 | ND<0.5 | ND<1.0 | ND<0.47 | ND<0.5 | ND<1.0 | ND<0.47 | ND<0.5 | ND<1.0 | ND<0.47 | ND<1.0 |
| Chloroethane | -- | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<1.0 |
| Chloroform | 100 [b] | **0.27** | ND<0.5 | **0.33J** | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<1.0 |
| Dibromochloromethane | 100 [b] | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.24 | ND<1.0 |
| 1,2-Dibromoethane | -- | ND<0.23 | NA | ND<1.0 | ND<0.23 | NA | ND<1.0 | ND<0.23 | NA | ND<1.0 | ND<0.23 | ND<1.0 |
| 1,2-Dichlorobenzene | 600 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<1.0 |
| 1,3-Dichlorobenzene | 130 [a] | ND<0.18 | ND<0.5 | ND<1.0 | ND<0.18 | ND<0.5 | ND<1.0 | ND<0.18 | ND<0.5 | ND<1.0 | ND<0.18 | ND<1.0 |
| 1,4-Dichlorobenzene | 5 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<1.0 |
| Dichlorodifluoromethane | 1,000 [b] | ND<0.4 | ND<1.0 | ND<1.0 | ND<0.4 | ND<1.0 | ND<1.0 | ND<0.4 | ND<1.0 | ND<1.0 | ND<0.4 | ND<1.0 |
| 1,1-Dichloroethane | 5 | ND<0.19 | ND<0.5 | ND<1.0 | ND<0.19 | ND<0.5 | ND<1.0 | ND<0.19 | ND<0.5 | ND<1.0 | ND<0.19 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | ND<0.22 | ND<0.5 | ND<0.5 | ND<0.22 | ND<0.5 | ND<0.5 | ND<0.22 | ND<0.5 | ND<0.5 | ND<0.22 | ND<0.5 |
| 1,1-Dichloroethene | 6 | ND<0.21 | ND<0.5 | ND<1.0 | ND<0.21 | ND<0.5 | ND<1.0 | ND<0.21 | ND<0.5 | ND<1.0 | ND<0.21 | ND<1.0 |
| cis-1,2-Dichloroethene | 6 | ND<0.38 | ND<0.5 | ND<1.0 | ND<0.38 | ND<0.5 | ND<1.0 | ND<0.38 | ND<0.5 | ND<1.0 | ND<0.38 | ND<1.0 |
| trans-1,2-Dichloroethene | 10 | ND<0.17 | ND<0.5 | ND<1.0 | ND<0.17 | ND<0.5 | ND<1.0 | ND<0.17 | ND<0.5 | ND<1.0 | ND<0.17 | ND<1.0 |
| Isopropylbenzene | -- | ND<0.09 | ND<0.5 | ND<1.0 | ND<0.09 | ND<0.5 | ND<1.0 | ND<0.09 | ND<0.5 | ND<1.0 | ND<0.09 | ND<1.0 |
| Methylene chloride | 40 [a] | **0.35** | ND<0.5 | ND<2.0 | **0.65** | ND<0.5 | ND<2.0 | **0.33** | ND<0.5 | ND<2.0 | **0.55** | ND<2.0 |
| 1-Methylethylbenzene | -- | NA | NA | ND<1.0 | NA | NA | ND<1.0 | NA | NA | ND<1.0 | NA | ND<1.0 |
| Naphthalene | -- | ND<0.37 | ND<0.5 | ND<1.0 | ND<0.37 | ND<0.5 | ND<1.0 | ND<0.37 | ND<0.5 | ND<1.0 | ND<0.37 | ND<1.0 |
| n-Propylbenzene | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Styrene | 100 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<1.0 |
| 1,1,1,2-Tetrachloroethane | -- | ND<0.21 | ND<0.5 | ND<1.0 | ND<0.21 | ND<0.5 | ND<1.0 | ND<0.21 | ND<0.5 | ND<1.0 | ND<0.21 | ND<1.0 |
| Tetrachloroethene | 5 | **0.60** | ND<0.5 | **0.32J** | ND<0.29 | ND<0.5 | ND<1.0 | ND<0.29 | ND<0.5 | ND<1.0 | ND<0.29 | ND<1.0 |
| Tetrahydrofuran | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Toluene | 150 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | ND<0.26 | ND<0.5 | ND<1.0 | ND<0.26 | ND<0.5 | ND<1.0 | ND<0.26 | ND<0.5 | ND<1.0 | ND<0.26 | ND<1.0 |
| 1,1,2-Trichloroethane | 5 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.27 | ND<1.0 |
| Trichloroethene | 5 | **0.41** | ND<0.5 | **0.25J** | ND<0.21 | **0.51** | **0.32J** | **1.1** | **1.4** | **1.4** | ND<0.21 | ND<1.0 |
| Trichlorofluoromethane | 150 | ND<0.32 | ND<0.5 | ND<1.0 | ND<0.32 | ND<0.5 | ND<1.0 | ND<0.32 | ND<0.5 | ND<1.0 | ND<0.32 | ND<1.0 |
| 1,2,4-Trimethylbenzene | -- | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<1.0 |
| 1,3,5-Trimethylbenzene | -- | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.11 | ND<1.0 |
| Freon 113[5] | 1,200 | NA | NA | ND<5.0 | NA | NA | ND<5.0 | NA | NA | ND<5.0 | NA | ND<5.0 |
| Vinyl acetate | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Vinyl chloride | 0.5 | ND<0.2 | ND<0.5 | ND<0.5 | ND<0.2 | ND<0.5 | ND<0.5 | ND<0.2 | ND<0.5 | ND<0.5 | ND<0.2 | ND<0.5 |
| o-Xylene | 1,750 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<0.5 | ND<1.0 | ND<0.13 | ND<1.0 |
| p,m-Xylenes | 1,750 | ND<0.35 | ND<0.5 | ND<1.0 | ND<0.35 | ND<0.5 | ND<1.0 | ND<0.35 | ND<0.5 | ND<1.0 | ND<0.35 | ND<1.0 |
| Nitrate (as N) | 10 | **21** | **21.0** | **20.1** | **6.6** | **6.1** | **5.9** | **2.1** | **1.9** | **2.0** | NA | NA |
| Nitrite (as N) | 1 | ND<0.25 | NA | ND<0.05 | ND<0.25 | NA | ND<0.05 | ND<0.25 | NA | ND<0.05 | NA | NA |

***Notes:***

**VOC concentrations are in µg/l.**

**Nitrate/Nitrite concentrations are in mg/l.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- F = Field blank
- NS = No sample collected

[2] Only compounds detected in one or more samples are listed.

[3] California Maximum Contaminant Level (as of 12/95)

[a] California Action Level

[b] Federal MCL

[4] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996 by CDM;
All other samples were analyzed for VOCs using EPA Method 8260 by CDM
VOCs analyzed by EPA method 8260 for samples collected by GeoSyntec.
VOCs analyzed by EPA method 524.2 for samples collected by Stetson Engineers

[5] Freon 113 is 1,1,2-Trichloro-1,2,2-trifluoroethane

-- No Standard

B = Contaminant also detected in laboratory's method blank.

J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than limit indicated.

NA = Not analyzed

MW = Monitoring Well

bgs = below ground surface

Well Status:
- Active = Active Water Supply Well
- Inactive = Inactive Water Supply Well



CDM Camp Dresser & McKee
2581-112\SPRDSHT\WELLDTA.XLS
12/11/96

## Table 4-10
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
Additional Existing Wells

| Well Owner | | Valley County Water District | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well Recordation No. | | 01900028 | | | | 01900029 | | | | 01900031 | | | | |
| Well Status | | Active | | | | Inactive | | | | Inactive | | | | |
| Well Name | | West Maine (2) | | | | Morada (3) | | | | Paddy Lane (5) | | | | |
| Screen Interval (feet bgs) | | 250-580 | | | — | 275-585 | | | | 300-585 | | | — | — |
| Sampler | | CDM | Stetson | CDM | CDM | GeoSyntec | CDM | CDM | CDM | CDM | CDM | CDM | CDM | CDM |
| Sample Date | | 11-Apr-96 | 19-Jul-96 | 17-Oct-96 | 17-Oct-96 | 26-Mar-96 | 1-Jul-96 | 1-Jul-96 | 24-Sep-96 | 12-Jul-96 | 12-Jul-96 | 26-Sep-96 | 12-Jul-96 | 26-Sep-96 |
| Sample Type[1] | | GW | GW | GW | F | GW | GW | F | GW | GW | K | GW | F | F |
| VOCs [2,4] | MCL[3] | | | | | | | | | | | | | |
| Acetone | -- | NA | NA | NA | NA | ND<1.25 | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzene | 1 | ND<0.09 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.09 | ND<0.09 | ND<0.5 | ND<0.09 | ND<0.09 | ND<0.5 | ND<0.09 | ND<0.5 |
| Bromodichloromethane | 100 [b] | ND<0.44 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.28 | ND<0.28 | 0.16J | ND<0.28 | ND<0.28 | ND<1.0 | ND<0.28 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.16 | ND<0.5 | ND<1.0 | ND<1.0 | NA | ND<0.11 | ND<0.11 | ND<1.0 | 0.12 | 0.16 | ND<1.0 | ND<0.11 | ND<1.0 |
| sec-Butylbenzene | -- | ND<0.11 | ND<0.5 | ND<1.0 | ND<1.0 | NA | ND<0.11 | ND<0.11 | ND<1.0 | 0.16 | 0.13 | ND<1.0 | ND<0.11 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.15 | ND<0.5 | ND<1.0 | ND<1.0 | NA | ND<0.15 | ND<0.15 | ND<1.0 | 0.30 | ND<0.15 | ND<1.0 | ND<0.15 | ND<1.0 |
| Carbon tetrachloride | 0.5 | ND<0.46 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.28 | ND<0.28 | ND<0.5 | 4.0 | 3.9 | 2.1 | ND<0.28 | ND<0.5 |
| Chlorobenzene | 70 | ND<0.47 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.14 | ND<0.14 | ND<1.0 | ND<0.14 | ND<0.14 | ND<1.0 | ND<0.14 | ND<1.0 |
| Chloroethane | -- | ND<0.24 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.75 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<1.0 |
| Chloroform | 100 [b] | ND<0.24 | ND<0.5 | ND<1.0 | ND<1.0 | 1.2 | 1.1 | ND<0.24 | 0.86J | 5.7 | 5.8 | 4.6 | ND<0.24 | 0.064J |
| Dibromochloromethane | 100 [b] | ND<0.24 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<1.0 |
| 1,2-Dibromoethane | -- | ND<0.23 | NA | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.23 | ND<0.23 | ND<1.0 | ND<0.23 | ND<0.23 | ND<1.0 | ND<0.23 | ND<1.0 |
| 1,2-Dichlorobenzene | 600 | ND<0.27 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<1.0 |
| 1,3-Dichlorobenzene | 130 [a] | ND<0.18 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.18 | ND<0.18 | ND<1.0 | ND<0.18 | ND<0.18 | ND<1.0 | ND<0.18 | ND<1.0 |
| 1,4-Dichlorobenzene | 5 | ND<0.27 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<1.0 |
| Dichlorodifluoromethane | 1,000 [b] | ND<0.4 | ND<1.0 | ND<1.0 | ND<1.0 | 1.6 | 1.2 | ND<0.4 | 0.68J | 6.2 | 6.2 | 3.3 | ND<0.4 | ND<1.0 |
| 1,1-Dichloroethane | 5 | ND<0.19 | ND<0.5 | ND<1.0 | ND<1.0 | 1.0 | 0.67 | ND<0.19 | 1.0 | 3.2 | 3.2 | 2.5 | ND<0.19 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | ND<0.22 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.22 | ND<0.22 | ND<0.5 | 3.6 | 4.0 | 2.9 | ND<0.22 | ND<0.5 |
| 1,1-Dichloroethene | 6 | ND<0.21 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.21 | ND<0.21 | ND<1.0 | 5.2 | 5.5 | 3.6 | ND<0.21 | ND<1.0 |
| cis-1,2-Dichloroethene | 6 | ND<0.38 | ND<0.5 | ND<1.0 | ND<1.0 | 3.6 | 2.7 | ND<0.17 | 3.3 | 15 | 16 | 13 | ND<0.17 | ND<1.0 |
| trans-1,2-Dichloroethene | 10 | ND<0.17 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.17 | ND<0.17 | 0.12J | 0.18 | 0.20 | 0.28J | ND<0.17 | ND<1.0 |
| Isopropylbenzene | -- | ND<0.09 | ND<0.5 | ND<1.0 | ND<1.0 | NA | ND<0.09 | ND<0.09 | ND<1.0 | 0.17 | ND<0.09 | ND<1.0 | ND<0.09 | ND<1.0 |
| Methylene chloride | 40 [a] | ND<0.29 | ND<0.5 | 0.30JB | 0.25JB | ND<0.5 | ND<0.29 | ND<0.29 | 1.1J | ND<0.29 | ND<0.29 | 0.41J | ND<0.29 | 0.51J |
| 1-Methylethylbenzene | -- | NA | NA | ND<1.0 | ND<1.0 | NA | NA | NA | ND<1.0 | NA | NA | ND<1.0 | NA | ND<1.0 |
| Naphthalene | -- | ND<0.37 | ND<0.5 | ND<1.0 | 0.23J | ND<0.5 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | 0.93 | ND<1.0 | ND<0.37 | ND<1.0 |
| n-Propylbenzene | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Styrene | 100 | ND<0.13 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.75 | ND<0.11 | ND<0.11 | ND<1.0 | 0.14 | 0.11 | ND<1.0 | ND<0.11 | ND<1.0 |
| 1,1,1,2-Tetrachloroethane | -- | ND<0.21 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.21 | ND<0.21 | ND<1.0 | ND<0.21 | ND<0.21 | ND<1.0 | ND<0.21 | ND<1.0 |
| Tetrachloroethene | 5 | ND<0.29 | ND<0.5 | ND<1.0 | ND<1.0 | 3.9 | 4.1 | ND<0.29 | 3.3 | 19 | 19 | 13 | ND<0.29 | ND<1.0 |
| Tetrahydrofuran | -- | NA | NA | NA | NA | ND<0.5 | NA | NA | NA | NA | NA | NA | NA | NA |
| Toluene | 150 | ND<0.13 | ND<0.5 | ND<1.0 | 0.11J | ND<0.5 | ND<0.13 | 0.18 | ND<1.0 | 0.18 | 0.16 | ND<1.0 | 0.16 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | ND<0.26 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.26 | ND<0.26 | ND<1.0 | 0.79 | 0.49 | 0.21J | ND<0.26 | ND<1.0 |
| 1,1,2-Trichloroethane | 5 | ND<0.27 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<1.0 |
| Trichloroethene | 5 | ND<0.21 | ND<0.5 | ND<1.0 | ND<1.0 | 2.9 | 2.0 | ND<0.21 | 2.8 | 130 | 120 | 130 | ND<0.21 | 0.52J |
| Trichlorofluoromethane | 150 | ND<0.32 | ND<0.5 | 0.31JB | 0.30JB | ND<0.5 | ND<0.32 | ND<0.32 | ND<1.0 | 0.62 | 0.51 | ND<1.0 | ND<0.32 | ND<1.0 |
| 1,2,4-Trimethylbenzene | -- | ND<0.11 | ND<0.5 | ND<1.0 | ND<1.0 | NA | ND<0.11 | ND<0.11 | ND<1.0 | 0.18 | 0.17 | 0.27J | ND<0.11 | ND<1.0 |
| 1,3,5-Trimethylbenzene | -- | ND<0.11 | ND<0.5 | ND<1.0 | ND<1.0 | NA | ND<0.11 | ND<0.11 | ND<1.0 | 0.13 | 0.13 | ND<1.0 | ND<0.11 | ND<1.0 |
| Freon 113[5] | 1,200 | NA | NA | ND<5.0 | ND<5.0 | NA | NA | NA | ND<5.0 | NA | NA | ND<5.0 | NA | ND<5.0 |
| Vinyl acetate | -- | NA | NA | NA | NA | ND<1.25 | NA | NA | ND<1.0 | NA | NA | NA | NA | NA |
| Vinyl chloride | 0.5 | ND<0.2 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.2 | ND<0.2 | ND<0.5 | ND<0.2 | ND<0.20 | ND<0.5 | ND<0.2 | ND<0.5 |
| o-Xylene | 1,750 | ND<0.13 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.11 | ND<0.11 | ND<1.0 | 0.18 | 0.11 | ND<1.0 | ND<0.11 | ND<1.0 |
| p,m-Xylenes | 1,750 | ND<0.35 | ND<0.5 | ND<1.0 | ND<1.0 | ND<0.5 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.35 | ND<1.0 |
| Nitrate (as N) | 10 | 0.71 | NA | NA | NA | 2.2 | 13 | NA | 13.7 | 6.7 | 6.7 | 7.1 | NA | NA |
| Nitrite (as N) | 1 | ND<0.25 | NA | NA | NA | NA | ND<0.25 | NA | ND<0.05 | ND<0.25 | ND<0.25 | ND<0.05 | NA | NA |

***Notes:***

**VOC concentrations are in µg/l.**
**Nitrate/Nitrite concentrations are in mg/l.**
[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
F = Field blank
NS = No sample collected
[2] Only compounds detected in one or more samples are listed.
[3] California Maximum Contaminant Level (as of 12/95)

[a] California Action Level
[b] Federal MCL
[4] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996 by CDM;
All other samples were analyzed for VOCs using EPA Method 8260 by CDM
VOCs analyzed by EPA method 8260 for samples collected by GeoSyntec.
VOCs analyzed by EPA method 524.2 for samples collected by Stetson Engineers
[5] Freon 113 is 1,1,2-Trichloro-1,2,2-trifluoroethane
-- No Standard
B = Contaminant also detected in laboratory's method blank.
J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than limit indicated.
NA = Not analyzed
MW = Monitoring Well
bgs = below ground surface
Well Status:
Active = Active Water Supply Well
Inactive = Inactive Water Supply Well

**CDM** Camp Dresser & McKee
2541-112\BPRDGHTWELLDTA.XLS
12/11/96

**Table 4-10**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
Additional Existing Wells

| Well Owner | | Valley County Water District | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Well Recordation No. | | 01900035 | | | | | 08000060 | | 08000039 | | |
| Well Status | | Inactive | | | | | Active | | Inactive | | |
| Well Name | | Big Dalton (9) | | | | | Lante (10) | | Palm (11) | | |
| Screen Interval (feet bgs) | | 250-582 | | | | | 275-577 | -- | 540-582, 594-602 | | |
| Sampler | | CDM | CDM | CDM | CDM | CDM | CDM | CDM | CDM | CDM | CDM |
| Sample Date | | 22-Mar-96 | 22-Mar-96 | 26-Jun-96 | 26-Jun-96 | 24-Sep-96 | 11-Apr-96 | 11-Apr-96 | 10-Jul-96 | 10-Jul-96 | 25-Sep-96 |
| Sample Type[1] | | GW | K | GW | K | GW | GW | F | GW | F | GW |
| VOCs [2,4] | MCL[3] | | | | | | | | | | |
| Acetone | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzene | 1 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.5 | 0.11 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.5 |
| Bromodichloromethane | 100 [b] | ND<0.44 | ND<0.44 | ND<0.28 | ND<0.28 | ND<1.0 | ND<0.44 | ND<0.44 | ND<0.28 | ND<0.28 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.16 | ND<0.16 | ND<0.11 | ND<0.11 | ND<1.0 | 0.22 | ND<0.16 | ND<0.11 | ND<0.11 | ND<1.0 |
| sec-Butylbenzene | -- | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.15 | ND<0.15 | ND<0.15 | ND<0.15 | ND<1.0 |
| Carbon tetrachloride | 0.5 | 0.86 | 0.82 | 0.63 | 0.62 | 0.38J | 7.1 | ND<0.46 | 0.96 | ND<0.28 | 0.77 |
| Chlorobenzene | 70 | ND<0.47 | ND<0.47 | ND<0.14 | ND<0.14 | ND<1.0 | 0.49 | ND<0.47 | ND<0.14 | ND<0.14 | ND<1.0 |
| Chloroethane | -- | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 |
| Chloroform | 100 [b] | 1.9 | 1.9 | 1.4 | 1.4 | 1.2 | 19 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 |
| Dibromochloromethane | 100 [b] | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<0.24 | ND<0.24 | ND<1.0 |
| 1,2-Dibromoethane | -- | ND<0.23 | ND<0.23 | ND<0.23 | ND<0.23 | ND<1.0 | ND<0.23 | ND<0.23 | ND<0.23 | ND<0.23 | ND<1.0 |
| 1,2-Dichlorobenzene | 600 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | 0.34 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 |
| 1,3-Dichlorobenzene | 130 [a] | ND<0.18 | ND<0.18 | ND<0.18 | ND<0.18 | ND<1.0 | 0.21 | ND<0.18 | ND<0.18 | ND<0.18 | ND<1.0 |
| 1,4-Dichlorobenzene | 5 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | 0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 |
| *Dichlorodifluoromethane* | 1,000 [b] | *4.6* | *4.0* | *2.0* | *2.0* | *1.3* | *ND<0.4* | *ND<0.4* | *0.88* | *ND<0.4* | *0.88J* |
| 1,1-Dichloroethane | 5 | 0.86 | 0.83 | 0.43 | 0.41 | 0.31J | 6.7 | ND<0.19 | ND<0.19 | ND<0.19 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | 2.0 | 2.0 | 1.7 | 1.7 | 1.3 | 8.8 | ND<0.22 | ND<0.22 | ND<0.22 | ND<0.5 |
| 1,1-Dichloroethene | 6 | 0.41 | 0.42 | ND<0.21 | 0.24 | ND<1.0 | 110 | ND<0.21 | 0.49 | ND<0.21 | 1.0 |
| cis-1,2-Dichloroethene | 6 | 1.9 | 2.0 | 1.1 | 1.2 | 0.85J | 81 | ND<0.38 | 0.35 | ND<0.17 | 0.53J |
| trans-1,2-Dichloroethene | 10 | ND<0.17 | ND<0.17 | ND<0.17 | ND<0.17 | ND<1.0 | 0.38 | ND<0.17 | ND<0.17 | ND<0.17 | ND<1.0 |
| Isopropylbenzene | -- | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.09 | ND<1.0 | ND<0.09 | ND<0.09 | ND<0.09 | ND<0.09 | ND<1.0 |
| Methylene chloride | 40 [a] | ND<0.29 | ND<0.29 | ND<0.29 | ND<0.29 | ND<2.0 | 1.1B | 0.74B | ND<0.29 | ND<0.29 | 1.1J |
| 1-Methylethylbenzene | -- | NA | NA | NA | NA | ND<1.0 | NA | NA | NA | NA | ND<1.0 |
| Naphthalene | -- | ND<0.37 | ND<0.37 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | 0.37 | ND<0.37 | ND<0.37 | ND<1.0 |
| n-Propylbenzene | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Styrene | 100 | ND<0.13 | ND<0.13 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.13 | ND<0.13 | ND<0.11 | ND<0.11 | ND<1.0 |
| 1,1,1,2-Tetrachloroethane | -- | ND<0.21 | ND<0.21 | ND<0.21 | ND<0.21 | ND<1.0 | 0.54 | ND<0.21 | ND<0.21 | ND<0.21 | ND<1.0 |
| Tetrachloroethene | 5 | 4.3 | 6.6 | 3.9 | 4.3 | 1.6 | 1,200 | 0.36 | 1.9 | 0.48 | 2.4 |
| Tetrahydrofuran | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Toluene | 150 | ND<0.13 | ND<0.13 | 0.18 | ND<0.13 | ND<1.0 | ND<0.13 | ND<0.13 | 0.21 | ND<0.13 | ND<1.0 |
| 1,1,1-Trichloroethane | 200 | ND<0.26 | ND<0.26 | ND<0.26 | ND<0.26 | ND<1.0 | 76 | ND<0.26 | 0.33 | ND<0.26 | 0.22J |
| 1,1,2-Trichloroethane | 5 | ND<0.27 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 | 0.50 | ND<0.27 | ND<0.27 | ND<0.27 | ND<1.0 |
| Trichloroethene | 5 | 26 | 25 | 15 | 16 | 15 | 760 | ND<0.21 | 3.8 | ND<0.21 | 6.1 |
| Trichlorofluoromethane | 150 | ND<0.32 | ND<0.32 | ND<0.32 | ND<0.32 | ND<1.0 | 2.8 | ND<0.32 | ND<0.32 | ND<0.32 | ND<1.0 |
| 1,2,4-Trimethylbenzene | -- | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 |
| 1,3,5-Trimethylbenzene | -- | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<0.11 | ND<0.11 | ND<1.0 |
| Freon 113[5] | 1,200 | NA | NA | NA | NA | ND<5.0 | NA | NA | NA | NA | ND<5.0 |
| Vinyl acetate | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Vinyl chloride | 0.5 | ND<0.2 | ND<0.2 | ND<0.2 | ND<0.2 | ND<0.5 | ND<0.2 | ND<0.2 | ND<0.2 | ND<0.2 | ND<0.5 |
| o-Xylene | 1,750 | ND<0.13 | ND<0.13 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.13 | ND<0.13 | 0.12 | ND<0.11 | ND<1.0 |
| p,m-Xylenes | 1,750 | ND<0.35 | ND<0.35 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.35 | ND<0.35 | ND<0.35 | ND<0.35 | ND<1.0 |
| Nitrate (as N) | 10 | 4.8 | 4.9 | 4.3 | 4.3 | 4.4 | 6.4 | NA | 2.3 | NA | 2.3 |
| Nitrite (as N) | 1 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.05 | ND<0.25 | NA | ND<0.25 | NA | ND<0.05 |

***Notes:***

**VOC concentrations are in µg/l.**
**Nitrate/Nitrite concentrations are in mg/l.**
[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
F = Field blank
NS = No sample collected
[2] Only compounds detected in one or more samples are listed.
[3] California Maximum Contaminant Level (as of 12/95)

[a] California Action Level
[b] Federal MCL
[4] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996 by CDM;
All other samples were analyzed for VOCs using EPA Method 8260 by CDM
VOCs analyzed by EPA method 8260 for samples collected by GeoSyntec.
VOCs analyzed by EPA method 524.2 for samples collected by Stetson Engineers
[5] Freon 113 is 1,1,2-Trichloro-1,2,2-trifluoroethane
-- No Standard
B = Contaminant also detected in laboratory's method blank.
J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than limit indicated.
NA = Not analyzed
MW = Monitoring Well
bgs = below ground surface
Well Status:
Active = Active Water Supply Well
Inactive = Inactive Water Supply Well

CDM Camp Dresser & McKee
2581-112\SPROSHT\WELLDTA.XLS
12/11/96

**Table 4-10**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
Additional Existing Wells

| Well Owner | | ALRC | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well Recordation No. | | W11AZW1R | | | | | W11AZW03 | | | W11AZW09 | | | |
| Well Status | | MW | | | | | MW | | | MW | | | |
| Well Name | | MW-1R | | | | | MW-3 | | | MW-9 | | | |
| Screen Interval (feet bgs) | | 258-455 | | | | | 180-385 | | | 195-450 | | | |
| Sampler | | GeoSyntec | GeoSyntec | CDM | GeoSyntec | CDM | GeoSyntec | GeoSyntec | GeoSyntec | GeoSyntec | CDM | GeoSyntec | GeoSyntec |
| Sample Date | | 14-Mar-96 | 13-Jun-96 | 13-Jun-96 | 12-Sep-96 | 12-Sep-96 | 13-Mar-96 | 11-Jun-96 | 11-Sep-96 | 13-Mar-96 | 13-Mar-96 | 11-Jun-96 | 11-Sep-96 |
| Sample Type[1] | | GW | GW | K | GW | K | GW | | | GW | K | GW | GW |
| VOCs [2,4] | MCL[3] | | | | | | | | | | | | |
| Acetone | -- | 4.6 | ND<1.25 | NA | ND<1.25 | NA | ND<1.25 | ND<1.25 | ND<1.25 | ND<1.25 | NA | ND<1.25 | ND<1.25 |
| Benzene | 1 | ND<0.5 | ND<0.5 | 0.49 | ND<0.5 | 0.37J | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.09 | ND<0.5 | ND<0.5 |
| Bromodichloromethane | 100 [b] | ND<0.5 | ND<0.5 | ND<0.44 | ND<0.5 | ND<1.0 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.44 | ND<0.5 | ND<0.5 |
| n-Butylbenzene | -- | NA | NA | ND<0.11 | NA | ND<1.0 | NA | NA | NA | NA | ND<0.16 | NA | NA |
| sec-Butylbenzene | -- | NA | NA | 0.24 | NA | ND<1.0 | NA | NA | NA | NA | ND<0.11 | NA | NA |
| tert-Butylbenzene | -- | NA | NA | 0.43 | NA | ND<1.0 | NA | NA | NA | NA | ND<0.15 | NA | NA |
| Carbon tetrachloride | 0.5 | ND<0.5 | 4.0 | ND<0.28 | 8.0 | ND<0.5 | 10.2 | 17.2 | 13.2 | 0.6 | 0.65 | 3.4 | 15.5 |
| Chlorobenzene | 70 | 1.7 | 1.0 | 0.66 | 0.7 | 0.51J | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.47 | ND<0.5 | ND<0.5 |
| Chloroethane | -- | ND<0.75 | ND<0.75 | ND<0.24 | ND<0.75 | ND<1.0 | ND<0.75 | ND<0.75 | ND<0.75 | ND<0.75 | ND<0.24 | 36.5 | ND<0.75 |
| Chloroform | 100 [b] | ND<0.5 | ND<0.5 | 0.47 | ND<0.5 | 0.47J | 3.8 | 2.7 | 1.0 | 1.4 | 1.7 | 4.8 | 17.3 |
| Dibromochloromethane | 100 [b] | ND<0.5 | ND<0.5 | ND<0.24 | ND<0.5 | ND<1.0 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.24 | ND<0.5 | ND<0.5 |
| 1,2-Dibromoethane | -- | ND<0.5 | ND<0.5 | ND<0.23 | ND<0.5 | ND<1.0 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.23 | ND<0.5 | 1.2 |
| 1,2-Dichlorobenzene | 600 | 3.5 | 2.3 | 1.8 | 1.4 | 1.2J | ND<0.5 | ND<0.5 | 1.4 | ND<0.5 | ND<0.27 | ND<0.5 | ND<0.5 |
| 1,3-Dichlorobenzene | 130 [a] | 0.5 | ND<0.5 | 0.31 | ND<0.5 | ND<1.0 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.18 | ND<0.5 | ND<0.5 |
| 1,4-Dichlorobenzene | 5 | 29.7 | 21.4 | 14 | 13.6 | 9.2 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.27 | ND<0.5 | ND<0.5 |
| Dichlorodifluoromethane | 1,000 [b] | ND<0.5 | ND<0.5 | ND<0.4 | ND<0.5 | ND<1.0 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.4 | ND<0.5 | ND<0.5 |
| 1,1-Dichloroethane | 5 | 5.6 | 7.3 | 6.2 | 7.2 | 5.1 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.19 | ND<0.5 | 1.7 |
| 1,2-Dichloroethane | 0.5 | ND<0.5 | ND<0.5 | 0.35 | ND<0.5 | 0.41J | 1.9 | ND<0.5 | ND<0.5 | ND<0.5 | 0.39 | 1.0 | 9.5 |
| 1,1-Dichloroethene | 6 | 49.2 | 97.1 | 130 | 177 | 170 | 3.3 | 3.1 | 1.9 | 0.5 | 0.32 | 1.4 | 7.4 |
| cis-1,2-Dichloroethene | 6 | ND<0.5 | 7.6 | 6.4 | 8.5 | 5.8 | 15.2 | 6.9 | 4.0 | 3.0 | 4.1 | 26.3 | 383 |
| trans-1,2-Dichloroethene | 10 | ND<0.5 | ND<0.5 | ND<0.17 | ND<0.5 | 0.33J | 0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.17 | ND<0.5 | 4.3 |
| Isopropylbenzene | -- | NA | NA | 0.14 | NA | ND<1.0 | NA | NA | NA | NA | ND<0.09 | NA | NA |
| Methylene chloride | 40 [a] | ND<0.5 | ND<0.5 | ND<0.29 | ND<0.5 | ND<2.0 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.29 | ND<0.5 | ND<0.5 |
| 1-Methylethylbenzene | -- | NA | NA | NA | NA | ND<1.0 | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | -- | ND<0.5 | ND<0.5 | ND<0.37 | ND<0.5 | ND<1.0 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | 1.3 | ND<0.5 | ND<0.5 |
| n-Propylbenzene | -- | ND<1.0 | ND<1.0 | ND<1.0 | NA | ND<1.0 | ND<1.0 | ND<1.0 | NA | ND<1.0 | ND<1.0 | ND<1.0 | NA |
| Styrene | 100 | ND<0.75 | ND<0.75 | ND<0.11 | ND<0.75 | ND<1.0 | ND<0.75 | ND<0.75 | ND<0.75 | ND<0.75 | ND<0.13 | ND<0.75 | ND<0.75 |
| 1,1,1,2-Tetrachloroethane | -- | ND<0.5 | ND<0.5 | ND<0.21 | ND<0.5 | ND<1.0 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.21 | ND<0.5 | ND<0.5 |
| Tetrachloroethene | 5 | 3.3 | 20.7 | 20 | 16.5 | 29 | 10.4 | 20.2 | 9.9 | 26.2 | 29 | 123 | 1450 |
| Tetrahydrofuran | -- | 29.1 | 9.9 | NA | 4.7 | NA | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | NA | ND<0.5 | 2.2 |
| Toluene | 150 | ND<0.5 | ND<0.5 | 0.14 | ND<0.5 | ND<1.0 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.13 | ND<0.5 | ND<0.5 |
| 1,1,1-Trichloroethane | 200 | 6.5 | 20 | 19 | 32 | 33 | ND<0.5 | 1.1 | ND<0.5 | ND<0.5 | ND<0.26 | 0.5 | ND<0.5 |
| 1,1,2-Trichloroethane | 5 | ND<0.5 | ND<0.5 | ND<0.27 | ND<0.5 | ND<1.0 | ND<0.5 | 45.3 | ND<0.5 | ND<0.5 | ND<0.27 | 10.2 | ND<0.5 |
| Trichloroethene | 5 | 13.4 | 47.3 | 52 | 70 | 62 | 262 | ND<0.5 | 153 | 24.1 | 24 | 103 | 1140 |
| Trichlorofluoromethane | 150 | ND<0.5 | ND<0.5 | ND<0.32 | ND<0.5 | ND<1.0 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.32 | ND<0.5 | 1.0 |
| 1,2,4-Trimethylbenzene | -- | NA | NA | ND<0.11 | NA | ND<1.0 | NA | NA | NA | NA | ND<0.11 | NA | NA |
| 1,3,5-Trimethylbenzene | -- | NA | NA | ND<0.11 | NA | ND<1.0 | NA | NA | NA | NA | ND<0.11 | NA | NA |
| Freon 113[5] | 1,200 | NA | NA | NA | NA | ND<5.0 | NA | NA | NA | NA | NA | NA | NA |
| Vinyl acetate | -- | ND<1.25 | ND<1.25 | NA | ND<1.25 | NA | ND<1.25 | ND<1.25 | ND<1.25 | ND<1.25 | NA | ND<1.25 | 1.4 |
| Vinyl chloride | 0.5 | 3.4 | 1.2 | 0.91 | 0.5 | 0.27J | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.2 | ND<0.5 | ND<0.5 |
| o-Xylene | 1,750 | ND<0.5 | ND<0.5 | ND<0.11 | ND<0.5 | ND<1.0 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.13 | ND<0.5 | ND<0.5 |
| p,m-Xylenes | 1,750 | ND<0.5 | ND<0.5 | ND<0.35 | ND<0.5 | ND<1.0 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.35 | ND<0.5 | ND<0.5 |
| Nitrate (as N) | 10 | ND<0.1 | 1.2 | NA | 1.3 | NA | 6.6 | 5.2 | 4.8 | 4.8 | 6.1 | 5.5 | 7.2 |
| Nitrite (as N) | 1 | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND<0.25 | NA | NA |

***Notes:***

**VOC concentrations are in µg/l.**
**Nitrate/Nitrite concentrations are in mg/l.**
[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
F = Field blank
NS = No sample collected
[2] Only compounds detected in one or more samples are listed.
[3] California Maximum Contaminant Level (as of 12/95)

[a] California Action Level
[b] Federal MCL
[4] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996 by CDM;
All other samples were analyzed for VOCs using EPA Method 8260 by CDM
VOCs analyzed by EPA method 8260 for samples collected by GeoSyntec.
VOCs analyzed by EPA method 524.2 for samples collected by Stetson Engineers
[5] Freon 113 is 1,1,2-Trichloro-1,2,2-trifluoroethane
-- No Standard
B = Contaminant also detected in laboratory's method blank.
J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than limit indicated.
NA = Not analyzed
MW = Monitoring Well
bgs = below ground surface
Well Status:
Active = Active Water Supply Well
Inactive = Inactive Water Supply Well



CDM Camp Dresser & McKee
2581-112\BPROGHTWELLOTA.XLS
12/11/96

Table 4-10
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - VOCs
Additional Existing Wells

| Well Owner | | LA County | | | | | | Norac | | | | Polopolus | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well Recordation No. | | Z1000006 | | | | | | W10NCMW1 | | | | 01902169 | | |
| Well Status | | Observation Well | | | | | | MW | | | | Inactive Irrigation | | |
| Well Name | | Key Well | | | | | | 1 | | | | 1 | | |
| Screen Interval (feet bgs) | | 80-284 | | | | | | 255-310 | | | | 120-280 | | |
| Sampler | | CDM | CDM | CDM | CDM | CDM | CDM | GeoSyntec | CDM | CDM | CDM | CDM | CDM | CDM |
| Sample Date | | 19-Apr-96 | 25-Jun-96 | 25-Sep-96 | 19-Apr-96 | 25-Jun-96 | 25-Sep-96 | 15-Mar-96 | 27-Jun-96 | 27-Sep-96 | 27-Sep-96 | 27-Jun-96 | 1-Oct-96 | 1-Oct-96 |
| Sample Type[1] | | GW | | | F | | | GW | | | F | GW | GW | F |
| VOCs[2,4] | MCL[3] | | | | | | | | | | | | | |
| Acetone | -- | NA | NA | NA | NA | NA | NA | 1.9 | NA | NA | NA | NA | NA | NA |
| *Benzene* | *1* | *0.093* | *ND<0.09* | *0.20J* | *ND<0.09* | *ND<0.09* | *ND<0.5* | *ND<0.5* | *0.15* | *0.12J* | *ND<0.5* | *ND<0.09* | *ND<0.5* | *ND<0.5* |
| Bromodichloromethane | 100[b] | ND<0.44 | ND<0.28 | 0.56J | ND<0.44 | ND<0.28 | ND<1.0 | ND<0.5 | ND<0.28 | 0.18J | ND<1.0 | ND<0.28 | 6.3 | ND<1.0 |
| n-Butylbenzene | -- | ND<0.16 | ND<0.11 | ND<1.0 | ND<0.16 | ND<0.11 | ND<1.0 | NA | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.11 | ND<1.0 | ND<1.0 |
| sec-Butylbenzene | -- | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 | NA | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.11 | ND<1.0 | ND<1.0 |
| tert-Butylbenzene | -- | ND<0.15 | ND<0.15 | ND<1.0 | ND<0.15 | ND<0.15 | ND<1.0 | NA | ND<0.15 | ND<1.0 | ND<1.0 | ND<0.15 | ND<1.0 | ND<1.0 |
| Carbon tetrachloride | 0.5 | 1.4 | 1.2 | 1.0 | ND<0.46 | ND<0.28 | ND<0.5 | 1.8 | 1.9 | 1.8 | ND<0.5 | 0.44 | 0.42J | ND<0.5 |
| Chlorobenzene | 70 | ND<0.47 | ND<0.14 | 0.16J | ND<0.47 | ND<0.14 | ND<1.0 | ND<0.5 | ND<0.14 | ND<1.0 | ND<1.0 | ND<0.14 | 0.13J | ND<1.0 |
| Chloroethane | -- | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.75 | ND<0.24 | ND<1.0 | ND<1.0 | ND<0.24 | ND<1.0 | ND<1.0 |
| Chloroform | 100[b] | 21 | 17 | 16 | ND<0.24 | ND<0.24 | ND<1.0 | 2.0 | 2.4 | 3.6 | ND<1.0 | 67 | 68 | ND<1.0 |
| Dibromochloromethane | 100[b] | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.24 | ND<0.24 | ND<1.0 | ND<0.5 | ND<0.24 | ND<1.0 | ND<1.0 | 0.68 | ND<1.0 | ND<1.0 |
| 1,2-Dibromoethane | -- | ND<0.23 | ND<0.23 | ND<1.0 | ND<0.23 | ND<0.23 | ND<1.0 | ND<0.5 | ND<0.23 | ND<1.0 | ND<1.0 | ND<0.23 | ND<1.0 | ND<1.0 |
| 1,2-Dichlorobenzene | 600 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.5 | ND<0.27 | ND<1.0 | ND<1.0 | ND<0.27 | ND<1.0 | ND<1.0 |
| 1,3-Dichlorobenzene | 130[a] | ND<0.18 | ND<0.18 | ND<1.0 | ND<0.18 | ND<0.18 | ND<1.0 | ND<0.5 | ND<0.18 | ND<1.0 | ND<1.0 | ND<0.18 | ND<1.0 | ND<1.0 |
| *1,4-Dichlorobenzene* | *5* | *ND<0.27* | *ND<0.27* | *ND<1.0* | *ND<0.27* | *ND<0.27* | *ND<1.0* | *ND<0.5* | *ND<0.27* | *ND<1.0* | *ND<1.0* | *ND<0.27* | *ND<1.0* | *ND<1.0* |
| Dichlorodifluoromethane | 1,000[b] | ND<0.4 | ND<0.4 | ND<1.0 | ND<0.4 | ND<0.4 | ND<1.0 | ND<0.5 | ND<0.4 | ND<1.0 | ND<1.0 | ND<0.4 | ND<1.0 | ND<1.0 |
| 1,1-Dichloroethane | 5 | 3.0 | 2.4 | 3.2 | ND<0.19 | ND<0.19 | ND<1.0 | 1.8 | 0.71 | 0.83 | ND<1.0 | 1.5 | 1.6 | ND<1.0 |
| 1,2-Dichloroethane | 0.5 | 2.1 | 1.8 | 1.9 | ND<0.22 | ND<0.22 | ND<0.5 | 1.7 | 2.2 | 2.7 | ND<0.5 | 0.93 | 0.77J | ND<0.5 |
| 1,1-Dichloroethene | 6 | 87 | 85 | 72 | ND<0.21 | ND<0.21 | ND<1.0 | 46.7 | 20 | 21 | ND<1.0 | 36 | 26 | ND<1.0 |
| cis-1,2-Dichloroethene | 6 | 69 | 81 | 81 | ND<0.38 | ND<0.17 | ND<1.0 | 12.2 | 14 | 17 | ND<1.0 | 27 | 30 | ND<1.0 |
| trans-1,2-Dichloroethene | 10 | ND<0.17 | 0.35 | 0.71J | ND<0.17 | ND<0.17 | ND<1.0 | ND<0.5 | ND<0.17 | 0.46J | ND<1.0 | 0.57 | 1.2 | ND<1.0 |
| Isopropylbenzene | -- | 0.14 | ND<0.09 | ND<1.0 | ND<0.09 | ND<0.09 | ND<1.0 | NA | ND<0.09 | ND<1.0 | ND<1.0 | ND<0.09 | ND<1.0 | ND<1.0 |
| Methylene chloride | 40[a] | 0.92 | 0.94 | 1.3J | ND<0.29 | ND<0.29 | 0.82J | ND<0.5 | ND<0.29 | 0.39J | 3.9 | ND<0.29 | 0.51J | 2.5 |
| 1-Methylethylbenzene | -- | NA | NA | ND<1.0 | NA | NA | ND<1.0 | NA | NA | ND<1.0 | ND<1.0 | NA | 0.75J | ND<1.0 |
| Naphthalene | -- | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.37 | ND<0.37 | ND<1.0 | ND<0.5 | ND<0.37 | ND<1.0 | ND<1.0 | ND<0.37 | ND<1.0 | ND<1.0 |
| n-Propylbenzene | -- | ND<1.0 | ND<1.0 | ND<1.0 | NA | NA | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | 1.7 | ND<1.0 |
| Styrene | 100 | ND<0.13 | ND<0.11 | ND<1.0 | ND<0.13 | ND<0.11 | ND<1.0 | ND<0.75 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.11 | ND<1.0 | ND<1.0 |
| *1,1,1,2-Tetrachloroethane* | -- | *ND<0.21* | *ND<0.21* | *ND<1.0* | *ND<0.21* | *ND<0.21* | *ND<1.0* | *ND<0.5* | *ND<0.21* | 0.22J | ND<1.0 | ND<0.21 | ND<1.0 | ND<1.0 |
| Tetrachloroethene | 5 | 350 | 450 | 380 | ND<0.29 | 0.44 | ND<1.0 | 169 | 150 | 180 | ND<1.0 | 360 | 270 | ND<1.0 |
| Tetrahydrofuran | -- | NA | NA | NA | NA | NA | NA | ND<0.5 | NA | NA | NA | NA | ND<1.0 | ND<1.0 |
| Toluene | 150 | 0.53 | 0.14 | ND<1.0 | ND<0.13 | ND<0.13 | ND<1.0 | ND<0.5 | 0.19 | ND<1.0 | ND<1.0 | 0.13 | 0.14J | 0.24J |
| 1,1,1-Trichloroethane | 200 | 29 | 19 | 21 | ND<0.26 | ND<0.26 | ND<1.0 | 19.4 | 9.9 | 8.8 | ND<1.0 | 24 | 20 | ND<1.0 |
| 1,1,2-Trichloroethane | 5 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.27 | ND<0.27 | ND<1.0 | ND<0.5 | ND<0.27 | ND<1.0 | ND<1.0 | ND<0.27 | ND<1.0 | ND<1.0 |
| Trichloroethene | 5 | 640 | 680 | 860 | ND<0.21 | 0.68 | 0.26J | 131 | 130 | 200 | 1.8 | 260 | 220 | 1.2 |
| Trichlorofluoromethane | 150 | ND<0.32 | 0.52 | 0.39J | ND<0.32 | ND<0.32 | ND<1.0 | 2.0 | 0.80 | 0.34J | ND<1.0 | ND<0.32 | ND<1.0 | ND<1.0 |
| 1,2,4-Trimethylbenzene | -- | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.11 | 0.93J | ND<1.0 |
| 1,3,5-Trimethylbenzene | -- | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 | ND<0.11 | ND<0.11 | ND<1.0 | ND<1.0 | ND<0.11 | 1.9 | ND<1.0 |
| Freon 113[5] | 1,200 | NA | NA | 1.4J | NA | NA | ND<5.0 | NA | NA | 4.0J | ND<5.0 | NA | ND<5.0 | ND<5.0 |
| Vinyl acetate | -- | NA | NA | NA | NA | NA | NA | ND<1.25 | NA | NA | NA | NA | NA | NA |
| Vinyl chloride | 0.5 | ND<0.2 | ND<0.2 | ND<0.5 | ND<0.2 | ND<0.2 | ND<0.5 | ND<0.5 | ND<0.2 | ND<0.5 | ND<0.5 | ND<0.2 | ND<0.5 | ND<0.5 |
| *o-Xylene* | *1,750* | *ND<0.13* | *ND<0.11* | *ND<1.0* | *ND<0.13* | *ND<0.11* | *ND<1.0* | *ND<0.5* | *ND<0.11* | *ND<1.0* | *ND<1.0* | ND<0.11 | 0.79J | *ND<1.0* |
| p,m-Xylenes | 1,750 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.35 | ND<0.35 | ND<1.0 | ND<0.5 | ND<0.35 | ND<1.0 | ND<1.0 | ND<0.35 | 0.79J | ND<1.0 |
| Nitrate (as N) | 10 | 10 | 8.9 | 7.5 | NA | NA | NA | 0.2 | NA | NA | NA | 7.5 | NA | NA |
| Nitrite (as N) | 1 | ND<0.25 | ND<0.25 | ND<0.05 | NA | NA | NA | NA | NA | NA | NA | ND<0.25 | NA | NA |

***Notes:***

**VOC concentrations are in µg/l.**

**Nitrate/Nitrite concentrations are in mg/l.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- F = Field blank
- NS = No sample collected

[2] Only compounds detected in one or more samples are listed.

[3] *California Maximum Contaminant Level (as of 12/95)*

[a] California Action Level

[b] Federal MCL

[4] VOCs were analyzed using EPA Method 8021 for samples collected prior to September 1996 by CDM;
All other samples were analyzed for VOCs using EPA Method 8260 by CDM
VOCs analyzed by EPA method 8260 for samples collected by GeoSyntec.
VOCs analyzed by EPA method 524.2 for samples collected by Stetson Engineers

[5] Freon 113 is 1,1,2-Trichloro-1,2,2-trifluoroethane

-- No Standard

*B = Contaminant also detected in laboratory's method blank.*

J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than limit indicated.

NA = Not analyzed

MW = Monitoring Well

bgs = below ground surface

Well Status:
- Active = Active Water Supply Well
- Inactive = Inactive Water Supply Well

**Table 4-11**
Baldwin Park Operable Unit
Summary of Nitrate Analytical Data

| Well Name | Recordation No. | Screened Interval (feet bgs) | Sample Date | $NO_3$ Concentration (as N) | $NO_3$ Concentration (as $NO_3$) [1] |
|---|---|---|---|---|---|
| EPA MW5-1 (Zone 13) | EPAW5113 | 216-226 | 03/13/96 | ND<0.25 | ND<1.1 |
| | | | 06/20/96 | ND<0.25 | ND<1.1 |
| | | | 09/19/96 | ND<0.05 | ND<1.1 |
| EPA MW5-1 (Zone 12) | EPAW5112 | 287-297 | 03/13/96 | 7.7 | 34.1 |
| | | | 06/20/96 | 8.4 | 37.2 |
| | | | 09/19/96 | 8.1 | 35.9 |
| EPA MW5-1 (Zone 11) | EPAW5111 | 335-345 | 03/13/96 | 7.6 | 33.6 |
| | | | 06/20/96 | 6.1 | 27.0 |
| | | | 09/19/96 | 2.3 | 10.2 |
| EPA MW5-1 (Zone 10) | EPAW5110 | 430-440 | 03/13/96 | 5.6 | 24.8 |
| | | | 06/20/96 | 5.6 | 24.8 |
| | | | 09/19/96 | 6.0 | 26.6 |
| EPA MW5-1 (Zone 9) | EPAW5109 | 523-533 | 03/13/96 | 6.2 | 27.4 |
| | | | 06/20/96 | 5.9 | 26.1 |
| | | | 09/19/96 | 6.4 | 28.3 |
| EPA MW5-1 (Zone 8) | EPAW5108 | 640-650 | 03/13/96 | 6.2 | 27.4 |
| | | | 06/20/96 | 4.8 | 21.2 |
| | | | 09/19/96 | 4.9 | 21.7 |
| EPA MW5-1 (Zone 7) | EPAW5107 | 765-775 | 03/13/96 | 2.4 | 10.6 |
| | | | 06/20/96 | 2.4 | 10.6 |
| | | | 09/18/96 | 2.2 | 9.7 |
| EPA MW5-1 (Zone 6) | EPAW5106 | 875-885 | 03/12/96 | 1.9 | 8.4 |
| | | | 06/20/96 | 2.2 | 9.7 |
| | | | 09/18/96 | 2.4 | 10.6 |
| EPA MW5-1 (Zone 5) | EPAW5105 | 1030-1040 | 03/12/96 | 0.7 | 3.1 |
| | | | 06/20/96 | 0.5 | 2.2 |
| | | | 09/18/96 | 0.4 | 1.6 |
| EPA MW5-1 (Zone 4) | EPAW5104 | 1123-1133 | 03/12/96 | ND<0.25 | ND<1.1 |
| | | | 06/19/96 | ND<0.25 | ND<1.1 |
| | | | 09/18/96 | 0.1 | 0.3 |
| EPA MW5-1 (Zone 3) | EPAW5103 | 1256-1266 | 03/12/96 | 0.4 | 1.7 |
| | | | 06/19/96 | ND<0.25 | ND<1.1 |
| | | | 09/18/96 | ND<0.05 | ND<0.22 |
| EPA MW5-1 (Zone 2) | EPAW5102 | 1387-1397 | 03/11/96 | 0.3 | 1.4 |
| | | | 06/19/96 | ND<0.25 | ND<1.1 |
| | | | 09/18/96 | 0.1 | 0.5 |
| EPA MW5-1 (Zone 1) | EPAW5101 | 1495-1505 | 03/11/96 | 0.4 | 1.6 |
| | | | 06/19/96 | ND<0.25 | ND<1.1 |
| | | | 09/18/96 | 0.1 | 0.2 |

**Table 4-11**
Baldwin Park Operable Unit
Summary of Nitrate Analytical Data

| Well Name | Recordation No. | Screened Interval (feet bgs) | Sample Date | $NO_3$ Concentration (as N) | $NO_3$ Concentration (as $NO_3$) [1] |
|---|---|---|---|---|---|
| MW5-03 (Zone 10) | BPW50310 | 235-245 | 03/19/96 | 5.7 | 25.2 |
| MW5-03 (Zone 9) | BPW50309 | 300-310 | 03/19/96 | ND<0.25 | ND<1.1 |
| MW5-03 (Zone 8) | BPW50308 | 400-410 | 03/19/96 | 4.9 | 21.7 |
| MW5-03 (Zone 7) | BPW50307 | 510-520 | 03/19/96 | 1.8 | 8.0 |
| MW5-03 (Zone 6) | BPW50306 | 590-600 | 03/19/96 | 7.6 | 33.6 |
| MW5-03 (Zone 5) | BPW50305 | 670-680 | 03/18/96 | ND<0.25 | ND<1.1 |
| MW5-03 (Zone 4) | BPW50304 | 810-820 | 03/18/96 | ND<0.25 | ND<1.1 |
| MW5-03 (Zone 3) | BPW50303 | 920-930 | 03/18/96 | ND<0.25 | ND<1.1 |
| MW5-03 (Zone 2) | BPW50302 | 1015-1025 | 03/18/96 | ND<0.25 | ND<1.1 |
| MW5-03 (Zone 1) | BPW50301 | 1150-1160 | 03/18/96 | ND<0.25 | ND<1.1 |
| MW5-05 (Zone 4) | BPW50504 | 218 - 228 | 08/16/95 | 11.0 | 48.7 |
| | | | 10/13/95 | 11.0 | 48.7 |
| | | | 10/30/95 | 42 * | 186 * |
| | | | 03/20/96 | 12.0 | 53.1 |
| | | | 06/21/96 | 12.0 | 53.1 |
| | | | 09/23/96 | 9.9 | 43.8 |
| MW5-05 (Zone 3) | BPW50503 | 380 - 390 | 08/16/95 | 9.3 | 41.2 |
| | | | 10/12/95 | 3.7 | 16.4 |
| | | | 10/30/95 | 13 * | 58 * |
| | | | 03/20/96 | 3.7 | 16.4 |
| | | | 06/21/96 | 3.6 | 15.9 |
| | | | 09/23/96 | 3.9 | 17.3 |
| MW5-05 (Zone 2) | BPW50502 | 464 - 474 | 08/16/95 | 9.3 | 41.2 |
| | | | 10/12/95 | 3.6 | 15.9 |
| | | | 10/30/95 | 12 * | 53 * |
| | | | 03/20/96 | 3.3 | 14.6 |
| | | | 06/21/96 | 3.5 | 15.5 |
| | | | 09/23/96 | 3.8 | 16.8 |
| MW5-05 (Zone 1) | BPW50501 | 552 - 562 | 08/16/95 | 9.2 | 40.7 |
| | | | 10/12/95 | 2.1 | 9.3 |
| | | | 10/30/95 | 8.7 * | 38 * |
| | | | 03/20/96 | 2.0 | 8.9 |
| | | | 06/21/96 | 2.0 | 8.9 |
| | | | 09/23/96 | 2.0 | 8.9 |
| MW5-08 (Zone 4) | BPW50804 | 380 - 390 | 08/13/96 | 3.1 | 13.7 |
| | | | 09/24/96 | 0.6 | 2.8 |
| MW5-08 (Zone 3) | BPW50803 | 554 - 564 | 08/13/96 | 1.2 | 5.3 |
| | | | 09/24/96 | 1.1 | 4.9 |
| MW5-08 (Zone 2) | BPW50802 | 670 - 680 | 08/13/96 | 1.7 | 7.5 |
| | | | 09/24/96 | 1.3 | 5.8 |
| MW5-08 (Zone 1) | BPW50801 | 795 - 805 | 08/13/96 | 1.3 | 5.8 |
| | | | 09/24/96 | 1.3 | 5.8 |
| MW5-11 (Zone 3) | BPW51103 | 310 - 320 | 03/14/96 | 5.2 | 23.0 |
| MW5-11 (Zone 2) | BPW51102 | 530 - 540 | 03/14/96 | 1.0 | 4.2 |
| MW5-11 (Zone 1) | BPW51101 | 690 - 700 | 03/14/96 | 1.8 | 8.0 |

## Table 4-11
Baldwin Park Operable Unit
Summary of Nitrate Analytical Data

| Well Name | Recordation No. | Screened Interval (feet bgs) | Sample Date | $NO_3$ Concentration (as N) | $NO_3$ Concentration (as $NO_3$) [1] |
|---|---|---|---|---|---|
| MW5-13 (Zone 3) | BPW51303 | 340 - 350 | 03/14/96 | 8.3 | 36.7 |
| MW5-13 (Zone 2) | BPW51302 | 520 - 530 | 03/14/96 | 4.4 | 19.5 |
| MW5-13 (Zone 1) | BPW51301 | 684 - 694 | 03/14/96 | ND<0.25 | ND<1.1 |
| MW5-15 (Zone 3) | BPW51503 | 235 - 245 | 08/13/96 | 2.8 | 12.4 |
| | | | 09/23/96 | 3.0 | 13.3 |
| MW5-15 (Zone 2) | BPW51502 | 450-460 | 08/13/96 | 3.8 | 16.8 |
| | | | 09/23/96 | 3.8 | 16.8 |
| MW5-15 (Zone 1) | BPW51501 | 670 - 680 | 08/13/96 | 3.3 | 14.6 |
| | | | 09/23/96 | 3.3 | 14.6 |
| MW5-17 (Zone 3) | BPW51703 | 305 - 315 | 03/15/96 | 7.6 | 33.6 |
| MW5-17 (Zone 2) | BPW51702 | 540 - 550 | 03/15/96 | 2.8 | 12.4 |
| MW5-17 (Zone 1) | BPW51701 | 698 - 708 | 03/15/96 | 1.5 | 6.6 |
| MW5-18 (Zone 3) | BPW51803 | 500 - 510 | 09/23/96 | 2.2 | 9.7 |
| MW5-18 (Zone 2) | BPW51802 | 630 - 640 | 09/23/96 | 7.7 | 34.1 |
| MW5-18 (Zone 1) | BPW51801 | 780 - 790 | 09/23/96 | 3.0 | 13.3 |
| CalMat E-DURBIN | 01902920 | 238-314; | 04/10/96 | 1.6 | 7.1 |
| | | 366-484 | 09/27/96 | 1.5 | 6.6 |
| Covina Irrig. Co. Baldwin 3 | 01900882 | 198-251; 278-484 | 10/17/96 | 2.4 | 10.6 |
| Glendora 07G | 01900831 | 252-474 | 03/27/96 | 4.5 | 19.9 |
| | | | 09/24/96 | 17.7 | 78.3 |
| LA County Santa Fe 1 | 08000070 | 290-435 | 03/15/96 | 3.1 | 13.7 |
| LPVCWD 02 | 01901460 | 600-947 | 04/10/96 | 3.1 | 13.7 |
| | | | 07/01/96 | 5.5 | 24.2 |
| | | | 10/11/96 | 3.5 | 15.5 |
| LPVCWD 03 | 01902859 | 620-770 | 04/10/96 | 5.4 | 23.9 |
| | | | 07/01/96 | 5.4 | 23.9 |
| | | | 10/11/96 | 6.0 | 26.6 |
| LPVCWD 04 | 08000062 | 550-725 | 04/10/96 | 5.8 | 25.7 |
| | | | 07/01/96 | 5.3 | 23.6 |
| | | | 10/11/96 | 5.1 | 22.6 |
| Polopolus 01 | 01902169 | 120-280 | 06/27/96 | 7.5 | 33.2 |
| SGVWC B4B | 51902858 | 920-940; | 04/02/96 | 1.1 | 4.9 |
| | | 950-1154 | 07/18/96 | 1.4 | 6.0 |
| | | | 10/09/96 | 1.1 | 4.9 |
| SGVWC B6C | 71903093 | 275-420; | 04/02/96 | 10.0 | 44.3 |
| | | 440-465; | 07/17/96 | 10.4 | 46.0 |
| | | 480-506 | 10/08/96 | 10.1 | 44.7 |
| SGVWC B6D | 78000098 | 760-1032 | 04/02/96 | 1.9 | 8.4 |
| | | | 07/17/96 | 1.9 | 8.3 |
| | | | 10/08/96 | 2.0 | 8.9 |

**Table 4-11**
Baldwin Park Operable Unit
Summary of Nitrate Analytical Data

| Well Name | Recordation No. | Screened Interval (feet bgs) | Sample Date | $NO_3$ Concentration (as N) | $NO_3$ Concentration (as $NO_3$)[1] |
|---|---|---|---|---|---|
| SWS 139W1 | 01901598 | 120-349 | 04/12/96 | 21.0 | 92.9 |
| | | | 07/03/96 | 21.0 | 92.9 |
| | | | 10/07/96 | 20.1 | 89.0 |
| SWS 139W4 | 08000069 | 566-642; | 04/12/96 | 6.6 | 29.2 |
| | | 676-695; | 07/03/96 | 6.1 | 27.0 |
| | | 787-825 | 10/07/96 | 5.9 | 26.1 |
| SWS 139W5 | 08000095 | 750-1060 | 04/12/96 | 2.1 | 9.3 |
| | | | 07/03/96 | 1.9 | 8.4 |
| | | | 10/07/96 | 2.0 | 8.9 |
| VCWD 2 (WEST MAINE) | 01900028 | 250-580 | 04/11/96 | 0.7 | 3.1 |
| VCWD 3 (MORADA) | 01900029 | 275-585 | 03/26/96 | 2.2 | 9.7 |
| | | | 09/24/96 | 13.7 | 60.6 |
| VCWD 5 (PADDY LANE) | 01900031 | 300-585 | 07/12/96 | 6.7 | 29.7 |
| VCWD 9 (BIG DALTON) | 01900035 | 250-582 | 03/22/96 | 4.8 | 21.2 |
| | | | 06/26/96 | 4.3 | 19.0 |
| | | | 09/24/96 | 4.4 | 19.5 |
| VCWD 10 (LANTE) | 08000060 | 275-577 | 04/11/96 | 6.4 | 28.3 |
| VCWD 11 (PALM AVE) | 08000039 | 540-582; | 07/10/96 | 2.3 | 10.2 |
| | | 594-602 | 09/25/96 | 2.3 | 10.2 |
| 3030F (Key Well) | Z1000006 | 80-284 | 04/19/96 | 10.0 | 44.3 |
| | | | 06/25/96 | 8.9 | 39.4 |
| | | | 09/25/96 | 7.5 | 33.2 |
| Norac MW-1 | W10NCMW1 | 255-310 | 03/15/96 | 0.2 | 0.9 |
| AZ-2 (ALRC MW-4) | 11900038 | 350-614 | 03/12/96 | 14.9 | 65.9 |
| | | | 06/10/96 | 11.7 | 51.8 |
| | | | 09/12/96 | 11.6 | 51.3 |
| ALRC MW-1R | W11AZW1R | 258-455 | 03/14/96 | ND<0.1 | ND<0.4 |
| | | | 06/13/96 | 1.2 | 5.3 |
| | | | 09/12/96 | 1.3 | 5.8 |
| ALRC MW-3 | W11AZW03 | 180-385 | 03/13/96 | 6.6 | 29.2 |
| | | | 06/11/96 | 5.2 | 23.0 |
| | | | 09/11/96 | 4.8 | 21.2 |
| ALRC MW-9 | W11AZW09 | 195-450 | 03/13/96 | 4.8 | 21.2 |
| | | | 06/11/96 | 5.5 | 24.3 |
| | | | 09/11/96 | 7.2 | 31.9 |

***Notes:***

[1] Nitrate concentration (as $NO_3$) calculated by multiplying nitrate concentration (as N) by 4.426

Data collected during BPOU pre-remedial design groundwater monitoring program.

All results are reported in mg/l.

ND = Not detected at a concentration greater than the limit shown.

* Laboratory reported nitrate concentration as N; however, nitrate concentration appears to be reported as $NO_3$.

## Table 4-12
Baldwin Park Operable Unit
*Summary of Groundwater Analytical Results - Metals and General Minerals*
MW5-01

| Well ID | | | MW50113 | | MW50112 | MW50111 | MW50110 | MW50109 | MW50108 | MW50107 | MW50106 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Depth (ft bgs)** | | | 216-226 | | 287-297 | 335-345 | 430-440 | 523-533 | 640-650 | 765-775 | 875-885 |
| **Sample Date** | | | 13-Mar-96 | 13-Mar-96 | 13-Mar-96 | 13-Mar-96 | 13-Mar-96 | 13-Mar-96 | 13-Mar-96 | 13-Mar-96 | 12-Mar-96 |
| **Sample Type[1]** | | | GW | K | GW | GW | GW | GW | GW | GW | GW |
| **Metals** | **Method** | **MCL[2]** | | | | | | | | | |
| Aluminum | 6010 | 1 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | 0.129 | ND<0.0437 |
| Arsenic | 7060 | 0.05 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 |
| Barium | 6010 | 1 | 0.0865 | 0.107 | 0.158 | 0.197 | 0.154 | 0.142 | 0.148 | 0.0824 | 0.0940 |
| Cadmium | 6010 | 0.005 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 |
| Chromium | 6010 | 0.05 | ND<0.0018 | ND<0.0018 | ND<0.0018 | ND<0.0018 | 0.01780 | 0.0193 | 0.0217 | 0.00250 | ND<0.0018 |
| Copper | 6010 | 1[a] | 0.00642 | 0.00551 | 0.00490 | 0.00438 | 0.00990 | 0.00933 | 0.00705 | 0.00723 | 0.00274 |
| Iron | 6010 | 0.30[a] | ND<0.0225 | 0.0260 | 0.0484 | 0.0280 | 0.0357 | 0.0259 | 0.330 | 0.0828 | 0.0468 |
| Lead | 7421 | 0.05 | ND<0.000636 | 0.000740 | 0.00132 | 0.00107 | 0.00332 | ND<0.000636 | 0.000870 | ND<0.000636 | 0.00112 |
| Manganese | 6010 | 0.05[a] | 0.00250 | 0.00240 | 0.00260 | 0.00360 | 0.00580 | 0.00220 | 0.00210 | 0.00220 | ND<0.002 |
| Mercury | 7470 | 0.002 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | 0.000310 | 0.000330 | 0.000360 | ND<0.000173 | ND<0.000173 |
| Nickel | 6010 | 0.1 | ND<0.0047 | ND<0.0047 | ND<0.0047 | ND<0.0047 | ND<0.0047 | ND<0.0047 | ND<0.0047 | ND<0.0047 | ND<0.0047 |
| Zinc | 6010 | 5[a] | 0.0196 | 0.0464 | 0.0335 | 0.0412 | 0.0501 | 0.0340 | 0.0313 | 0.0283 | 0.0626 |
| **General Minerals** | | | | | | | | | | | |
| Calcium | 6010 | -- | 27.0 | 32.6 | 65.5 | 91.0 | 81.0 | 75.2 | 75.2 | 42.5 | 40.9 |
| Magnesium | 6010 | -- | 11.6 | 12.6 | 14.9 | 20.7 | 13.9 | 13.5 | 13.9 | 9.77 | 11.3 |
| Potassium | 6010 | -- | 5.35 | 5.16 | 4.39 | 4.95 | 3.47 | 2.91 | 3.56 | 2.64 | 2.75 |
| Sodium | 6010 | -- | 32.9 | 28.2 | 18.7 | 19.3 | 20.3 | 18.7 | 19.9 | 20.8 | 19.0 |
| Chloride | 300.0 | 250[a] | 36 | 36 | 35 | 40 | 31 | 26 | 26 | 8.4 | 9.1 |
| Nitrate (as N) | 300.0 | 10 | ND<0.25 | ND<0.25 | 7.7 | 7.6 | 5.6 | 6.2 | 6.2 | 2.4 | 1.9 |
| Nitrite (as N) | 300.0 | 1 | ND<0.25 | ND<0.25 | 0.57 | 3.2 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 |
| Sulfate | 300.0 | 250[a] | 38 | 38 | 36 | 43 | 33 | 31 | 30 | 26 | 34 |
| Bicarbonate Alk. | 310.1 | -- | 110 | 120 | 170 | 250 | 220 | 220 | 220 | 150 | 140 |
| Carbonate Alk. | 310.1 | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| TDS | 160.1 | 500[a,b] | 250 | 260 | 360 | 480 | 400 | 370 | 360 | 260 | 250 |
| TSS | 160.2 | -- | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 |
| Hardness | 130.2 | -- | 180 | 180 | 260 | 320 | 290 | 270 | 270 | 160 | 150 |
| Radon $^{222}$ (pCi/l) | 913 | 300[b,c] | 39 | 57 | 103 | 87 | 109 | 123 | 105 | 116 | 70 |

***Notes:***

**All concentrations are in mg/l unless otherwise indicated.**

[1] Sample Type:

GW = Groundwater sample

K = Duplicate (split) sample

N = Equipment decontamination rinsate blank

ND = Not detected at a concentration greater than the limit indicated.

[2] California Maximum Contaminant Level (as of 12/95)

[a] Secondary MCL

[b] Federal MCL

[c] Proposed MCL

bgs = below ground surface

NA = Not analyzed

## Table 4-12
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - Metals and General Minerals
MW5-01

| Well ID | | | MW50105 | MW50104 | MW50103 | MW50102 | MW50101 | QC Samples MW50102 | MW50106 | MW50113 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Depth (ft bgs)** | | | 1030-1040 | 1123-1133 | 1256-1266 | 1387-1397 | 1495-1505 | -- | | |
| **Sample Date** | | | 12-Mar-96 | 12-Mar-96 | 12-Mar-96 | 11-Mar-96 | 11-Mar-96 | 11-Mar-96 | 12-Mar-96 | 13-Mar-96 |
| **Sample Type[1]** | | | GW | GW | GW | GW | GW | N | | |
| **Metals** | **Method** | **MCL[2]** | | | | | | | | |
| Aluminum | 6010 | 1 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | 0.3580 | ND<0.0437 | ND<0.0437 |
| Arsenic | 7060 | 0.05 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 |
| Barium | 6010 | 1 | 0.110 | 0.0729 | 0.126 | 0.119 | 0.119 | 0.00386 | 0.00419 | 0.00366 |
| Cadmium | 6010 | 0.005 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 |
| Chromium | 6010 | 0.05 | 0.00269 | ND<0.0018 | ND<0.0018 | 0.00191 | 0.00642 | 0.00317 | 0.00268 | ND<0.0018 |
| Copper | 6010 | 1 [a] | 0.00804 | 0.00658 | 0.0842 | 0.00580 | 0.00793 | 0.5370 | 0.00773 | 0.00371 |
| Iron | 6010 | 0.30 [a] | 0.0259 | ND<0.0225 | 0.0401 | ND<0.0225 | 0.0284 | 0.0639 | 0.0324 | ND<0.0225 |
| Lead | 7421 | 0.05 | 0.00113 | ND<0.000636 | 0.00100 | 0.000680 | ND<0.000636 | 0.00104 | ND<0.000636 | ND<0.000636 |
| Manganese | 6010 | 0.05 [a] | ND<0.002 | ND<0.002 | 0.0188 | 0.00280 | 0.00270 | 0.00330 | 0.512 | ND<0.002 |
| Mercury | 7470 | 0.002 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 |
| Nickel | 6010 | 0.1 | ND<0.0047 | ND<0.0047 | ND<0.0047 | 0.00527 | ND<0.0047 | 0.7090 | ND<0.0047 | ND<0.0047 |
| Zinc | 6010 | 5 [a] | 0.0436 | 0.0268 | 0.0310 | 0.0743 | 0.0493 | 0.9500 | ND<0.0175 | ND<0.0175 |
| **General Minerals** | | | | | | | | | | |
| Calcium | 6010 | -- | 26.2 | 23.8 | 29.2 | 40.5 | 33.4 | 0.511 | 0.736 | 0.798 |
| Magnesium | 6010 | -- | 13.5 | 12.9 | 11.2 | 13.5 | 12.3 | 0.131 | 0.226 | 0.186 |
| Potassium | 6010 | -- | 3.96 | 4.11 | 4.61 | 3.93 | 4.22 | ND<0.358 | ND<0.358 | ND<0.358 |
| Sodium | 6010 | -- | 29.3 | 26.0 | 41.9 | 28.2 | 28.8 | 0.814 | 0.688 | 0.430 |
| Chloride | 300.0 | 250 [a] | 11 | 13 | 12 | 12 | 12 | ND<0.25 | ND<0.25 | ND<0.25 |
| Nitrate (as N) | 300.0 | 10 | 0.69 | ND<0.25 | 0.39 | 0.31 | 0.37 | ND<0.25 | ND<0.25 | ND<0.25 |
| Nitrite (as N) | 300.0 | 1 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 |
| Sulfate | 300.0 | 250 [a] | 23 | 23 | 27 | 29 | 27 | ND<1.0 | ND<1.0 | ND<1.0 |
| Bicarbonate Alk. | 310.1 | -- | 150 | 130 | 170 | 180 | 170 | ND<1.0 | 3.0 | ND<1.0 |
| Carbonate Alk. | 310.1 | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| TDS | 160.1 | 500 [a,b] | 230 | 200 | 260 | 270 | 260 | ND<12 | ND<12 | ND<12 |
| TSS | 160.2 | -- | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 |
| Hardness | 130.2 | -- | 130 | 120 | 130 | 170 | 150 | 80 | 16 | 12 |
| Radon $^{222}$ (pCi/l) | 913 | 300 [b,c] | 66 | 52 | 101 | 103 | 126 | NA | NA | NA |

***Notes:***

**All concentrations are in mg/l unless otherwise indicated.**

[1] Sample Type:

GW = Groundwater sample

K = Duplicate (split) sample

N = Equipment decontamination rinsate blank

ND = Not detected at a concentration greater than the limit indicated.

[2] California Maximum Contaminant Level (as of 12/95)

[a] Secondary MCL

[b] Federal MCL

[c] Proposed MCL

bgs = below ground surface

NA = Not analyzed

CDM Camp Dresser & McKee
2581-112\sprdshts\5_1ALL.XLS
11/22/96

# Table 4-13
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - Metals and General Minerals
MW5-03

| Well ID | | | MW50310 | | MW50309 | MW50308 | MW50307 | MW50306 | MW50305 | MW50304 | MW50303 | MW50302 | MW50301 | QC Samples MW50305 | QC Samples MW50310 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Depth (ft bgs)** | | | 235-245 | | 300-310 | 400-410 | 510-520 | 590-600 | 670-680 | 810-820 | 920-930 | 1015-1025 | 1150-1160 | -- | -- |
| **Sample Date** | | | 19-Mar-96 | 19-Mar-96 | 19-Mar-96 | 19-Mar-96 | 19-Mar-96 | 19-Mar-96 | 18-Mar-96 | 18-Mar-96 | 18-Mar-96 | 18-Mar-96 | 18-Mar-96 | 18-Mar-96 | 19-Mar-96 |
| **Sample Type[1]** | | | GW | K | GW | GW | GW | GW | GW | GW | GW | GW | GW | N | N |
| **Metals** | **Method** | **MCL[2]** | | | | | | | | | | | | | |
| Aluminum | 6010 | 1 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | 0.0907 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 |
| Arsenic | 7060 | 0.05 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 | 0.00611 | ND<0.00299 | 0.0114 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 |
| Barium | 6010 | 1 | 0.438 | 0.462 | 0.549 | 0.119 | 0.0539 | 0.0964 | 0.0225 | 0.0337 | 0.0132 | 0.0306 | 0.0458 | 0.00188 | 0.00218 |
| Cadmium | 6010 | 0.005 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 |
| Chromium | 6010 | 0.05 | 0.00187 | 0.00281 | ND<0.0018 | 0.00353 | 0.00301 | 0.00200 | 0.00295 | ND<0.0018 | ND<0.0018 | ND<0.0018 | ND<0.0018 | ND<0.0018 | ND<0.0018 |
| Copper | 6010 | 1[a] | 0.00451 | 0.00379 | 0.00401 | ND<0.0027 | ND<0.0027 | ND<0.0027 | 0.00629 | 0.00413 | 0.00397 | 0.00704 | 0.0777 | 0.00595 | ND<0.0027 |
| Iron | 6010 | 0.30[a] | 0.0450 | 0.178 | 0.150 | 0.0378 | 0.115 | 0.0834 | 0.1220 | 0.0244 | 0.0283 | 0.0754 | 0.0267 | 0.0228 | 0.0458 |
| Lead | 7421 | 0.05 | ND<0.000636 | ND<0.000636 | ND<0.000636 | 0.000770 | 0.000950 | ND<0.000636 | 0.000810 | 0.000660 | 0.000890 | 0.000690 | 0.000740 | 0.000960 | ND<0.000636 |
| Manganese | 6010 | 0.05[a] | 0.00698 | 0.0156 | 0.0369 | 0.00252 | 0.00972 | 0.00842 | 0.00540 | 0.0764 | 0.00995 | 0.0490 | 0.105 | ND<0.002 | 0.00417 |
| Mercury | 7470 | 0.002 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 |
| Nickel | 6010 | 0.1 | 0.00478 | ND<0.0047 | ND<0.0047 | ND<0.0047 | ND<0.0047 | ND<0.0047 | ND<0.0047 | 0.00294 | ND<0.0047 | ND<0.0047 | ND<0.0047 | ND<0.0047 | ND<0.0047 |
| Zinc | 6010 | 5[a] | 0.0249 | 0.0263 | 0.0343 | 0.0198 | ND<0.0175 | 0.0179 | 0.0216 | ND<0.0175 | ND<0.0175 | ND<0.0175 | 0.0130 | ND<0.0175 | 0.0199 |
| **General Minerals** | | | | | | | | | | | | | | | |
| Calcium | 6010 | -- | 172 | 184 | 241 | 80.2 | 29.5 | 52.6 | 11.8 | 19.6 | 8.15 | 14.5 | 20.9 | 0.0582 | 0.689 |
| Magnesium | 6010 | -- | 36.1 | 38.2 | 53.5 | 19.9 | 15.0 | 14.5 | 6.10 | 5.53 | 2.24 | 4.04 | 5.44 | 0.209 | 0.184 |
| Potassium | 6010 | -- | 7.00 | 7.49 | 7.87 | 6.02 | 5.60 | 4.70 | 5.58 | 5.92 | 4.89 | 5.55 | 5.7 | ND<0.358 | ND<0.358 |
| Sodium | 6010 | -- | 40.6 | 42.9 | 33.4 | 25.5 | 30.3 | 18.0 | 89.6 | 142 | 102 | 148 | 126 | 0.748 | 0.758 |
| Chloride | 300.0 | 250[a] | 85 | 86 | 180 | 23 | 17 | 16 | 26 | 53 | 18 | 44 | 39 | ND<0.25 | ND<0.25 |
| Nitrate (as N) | 300.0 | 10 | 5.7 | 5.7 | ND<0.25 | 4.9 | 1.8 | 7.6 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 |
| Nitrite (as N) | 300.0 | 1 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 |
| Sulfate | 300.0 | 250[a] | 38 | 38 | 40 | 32 | 27 | 30 | 46 | 49 | 58 | 40 | 31 | ND<1.0 | ND<1.0 |
| Bicarbonate Alk. | 310.1 | -- | 530 | 520 | 590 | 260 | 150 | 150 | 160 | 310 | 160 | 300 | 320 | 3.4 | 3.9 |
| Carbonate Alk. | 310.1 | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | 15 | ND<1.0 | 20 | 4.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| TDS | 160.1 | 500[a,b] | 800 | 790 | 1,100 | 360 | 230 | 270 | 520 | 500 | 370 | 550 | 470 | 360 | ND<12 |
| TSS | 160.2 | -- | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 | 10 | 10 | ND<10 | ND<10 |
| Hardness | 130.2 | -- | 610 | 550 | 350 | 280 | 140 | 190 | 67 | 91 | 32 | 63 | 87 | 3.9 | 12 |
| Radon $^{222}$ (pCi/l) | 913 | 300[b,c] | 119 | 141 | 209 | 130 | 94 | 118 | 46 | 44 | 64 | 42 | 63 | NA | NA |

***Notes:***

**All concentrations are in mg/l unless otherwise indicated.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- N = Equipment decontamination rinsate blank

ND = Not detected at a concentration greater than the limit indicated.
NA = Not analyzed

[2] California Maximum Contaminant Level (as of 12/95)
[a] Secondary MCL
[b] Federal MCL
[c] Proposed MCL
bgs = below ground surface

## Table 4-14
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - Metals and General Minerals
MW5-05

| Well ID | | | MW50504 | MW50503 | | MW50502 | MW50501 | QC Sample MW50504N |
|---|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | | 218 - 228 | 380 - 390 | | 464 - 474 | 552 - 562 | -- |
| Sample Date | | | 20-Mar-96 | 20-Mar-96 | 20-Mar-96 | 20-Mar-96 | 20-Mar-96 | 20-Mar-96 |
| Sample Type[1] | | | GW | GW | K | GW | GW | N |
| **Metals** | **Method** | **MCL[2]** | | | | | | |
| Aluminum | 6010 | 1 | **0.0587** | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 |
| Arsenic | 7060 | 0.05 | **0.00338** | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 |
| Barium | 6010 | 1 | **0.133** | **0.0894** | **0.0879** | **0.0629** | **0.0917** | **0.00168** |
| Cadmium | 6010 | 0.005 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 |
| Chromium | 6010 | 0.05 | ND<0.0018 | **0.00203** | ND<0.0018 | ND<0.0018 | **0.00221** | **0.00247** |
| Copper | 6010 | 1[a] | ND<0.0027 | ND<0.0027 | ND<0.0027 | ND<0.0027 | ND<0.0027 | ND<0.0027 |
| Iron | 6010 | 0.30[a] | **0.106** | **0.0323** | **0.0279** | **0.373** | **0.135** | ND<0.0225 |
| Lead | 7421 | 0.05 | ND<0.000636 | ND<0.000636 | **0.000920** | **0.00102** | ND<0.000636 | ND<0.000636 |
| Manganese | 6010 | 0.05[a] | **0.00619** | **0.00367** | ND<0.002 | **0.0300** | **0.0087** | **0.0164** |
| Mercury | 7470 | 0.002 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 |
| Nickel | 6010 | 0.1 | ND<0.0047 | ND<0.0047 | ND<0.0047 | ND<0.0047 | ND<0.0047 | ND<0.0047 |
| Zinc | 6010 | 5[a] | **0.0298** | **0.0229** | ND<0.0175 | ND<0.0175 | ND<0.0175 | **0.0310** |
| **General Minerals** | | | | | | | | |
| Calcium | 6010 | -- | **73.3** | **55.1** | **52.7** | **23.0** | **50.4** | **0.435** |
| Magnesium | 6010 | -- | **17.8** | **12.3** | **11.9** | **12.9** | **11.4** | **0.153** |
| Potassium | 6010 | -- | **4.84** | **3.95** | **3.64** | **4.46** | **3.61** | **0.368** |
| Sodium | 6010 | -- | **17.4** | **12.4** | **11.9** | **15.5** | **12.2** | **0.414** |
| Chloride | 300.0 | 250[a] | **22** | **14** | **14** | **16** | **17** | ND<0.25 |
| Sulfate | 300.0 | 250[a] | **36** | **22** | **22** | **26** | **28** | ND<1.0 |
| Bicarbonate Alk. | 310.1 | -- | **190** | **160** | **150** | **88** | **140** | **1.7** |
| Carbonate Alk. | 310.1 | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Hydroxide Alk. | 310.1 | -- | ND<4.0 | ND<4.0 | ND<4.0 | ND<4.0 | ND<4.0 | ND<4.0 |
| TDS | 160.1 | 500[a,b] | **350** | **250** | **230** | **180** | **230** | ND<12 |
| TSS | 160.2 | -- | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 |
| Hardness | 130.2 | -- | **270** | **210** | **200** | **100** | **170** | ND<1.0 |
| **Radon** $^{222}$ (pCi/l) | 913 | 300[b,c] | **137** | **278** | **92** | **88** | **100** | NA |

***Notes:***

**All concentrations are in mg/l unless otherwise indicated.**

[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
N = Equipment decontamination rinsate blank

[2] California Maximum Contaminant Level (as of 12/95)

ND = Not detected at a concentration greater than the limit indicated.

[a] Secondary MCL
[b] Federal MCL
[c] Proposed MCL
bgs = below ground surface
NA = Not analyzed

**CDM** Camp Dresser & McKee
2581-112\sprdshts\5_5ALL.XLS
11/25/96

**Table 4-15**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results -Metals and General Minerals
MW5-08

| Well ID | | | MW50804 | MW50803 | MW50802 | MW50801 | QC Sample MW50803N |
|---|---|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | | 380 - 390 | 554 - 564 | 670 - 680 | 795 - 805 | – |
| Sample Date | | | 24-Sep-96 | 24-Sep-96 | 24-Sep-96 | 24-Sep-96 | 24-Sep-96 |
| Sample Type[1] | | | GW | GW | GW | GW | N |
| **Metals** | **Method** | **MCL[2]** | | | | | |
| Aluminum | 6010 | 1 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.20 |
| Arsenic | 7060 | 0.05 | ND<0.010 | ND<0.010 | ND<0.010 | ND<0.010 | ND<0.010 |
| Barium | 6010 | 1 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.20 |
| Cadmium | 6010 | 0.005 | ND<0.005 | ND<0.005 | ND<0.005 | ND<0.005 | ND<0.005 |
| Chromium | 6010 | 0.05 | ND<0.010 | ND<0.010 | ND<0.010 | ND<0.010 | ND<0.010 |
| Copper | 6010 | 1 [a] | ND<0.025 | ND<0.025 | ND<0.025 | ND<0.025 | ND<0.025 |
| Iron | 6010 | 0.30 [a] | ND<0.10 | ND<0.10 | ND<0.10 | **0.22** | ND<0.10 |
| Lead | 7421 | 0.05 | ND<0.0030 | ND<0.0030 | ND<0.0030 | ND<0.0030 | ND<0.0030 |
| Manganese | 6010 | 0.05 [a] | ND<0.015 | ND<0.015 | ND<0.015 | ND<0.015 | ND<0.015 |
| Mercury | 7470 | 0.002 | ND<0.00020 | ND<0.00020 | ND<0.00020 | ND<0.00020 | ND<0.00020 |
| Nickel | 6010 | 0.1 | ND<0.040 | ND<0.040 | ND<0.040 | ND<0.040 | ND<0.040 |
| Zinc | 6010 | 5 [a] | ND<0.020 | ND<0.020 | ND<0.020 | ND<0.020 | ND<0.020 |
| **General Minerals** | | | | | | | |
| Calcium | 6010 | – | **55.4** | **56.8** | **45.7** | **64.7** | ND<5.0 |
| Magnesium | 6010 | – | **10.9** | **10.7** | **10.8** | **12.6** | ND<5.0 |
| Potassium | 6010 | – | ND<5.0 | ND<5.0 | ND<5.0 | ND<5.0 | ND<5.0 |
| Sodium | 6010 | – | **10.4** | **10.8** | **13.2** | **12.1** | ND<5.0 |
| Chloride | 300.0 | 250 [a] | **8.8** | **14.8** | **11.0** | **21.6** | ND<0.10 |
| Sulfate | 300.0 | 250 [a] | **21.6** | **22.6** | **27.5** | **33.4** | ND<0.20 |
| Nitrite | 300.0 | 10 | ND<0.050 | ND<0.050 | ND<0.050 | ND<0.050 | ND<0.050 |
| Nitrate | 300.0 | 1 | **0.63** | **1.1** | **1.3** | **1.3** | ND<0.050 |
| Bicarbonate Alk. | 310.1 | – | **162** | **164** | **144** | **160** | ND<4.0 |
| Carbonate Alk. | 310.1 | – | ND<4.0 | ND<4.0 | ND<4.0 | ND<4.0 | ND<4.0 |
| Hydroxide Alk. | 310.1 | – | ND<4.0 | ND<4.0 | ND<4.0 | ND<4.0 | ND<4.0 |
| TDS | 160.1 | 500 [a,b] | **256** | **239** | **227** | **274** | ND<10.0 |
| TSS | 160.2 | – | ND<20.0 | ND<10.0 | ND<10.0 | ND<10.0 | ND<10.0 |
| Hardness (as $CaCO_3$) | 130.2 | – | **192** | **188** | **171** | **255** | ND<2.0 |
| Radon $^{222}$ (pCi/l) | 913 | 300 [b,c] | | | | | |

***Notes:***

**All concentrations are in mg/l unless otherwise indicated.**

[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
N = Equipment decontamination rinsate blank

ND = Not detected at a concentration greater than the limit indicated.
NA = Not analyzed

[2] California Maximum Contaminant Level (as of 12/95)
[a] Secondary MCL
[b] Federal MCL
[c] Proposed MCL
bgs = below ground surface

**CDM** Camp Dresser & McKee
2581-112\eprdehts\5_8ALL.XLS
11/22/96

**Table 4-16**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - Metals and General Minerals
MW5-11

| **Well ID** | | | MW51103 | | MW51102 | MW51101 | QC Sample MW51103N |
|---|---|---|---|---|---|---|---|
| **Sample Depth (feet bgs)** | | | 310 - 320 | | 530 - 540 | 690 - 700 | — |
| **Sample Date** | | | 14-Mar-96 | 14-Mar-96 | 14-Mar-96 | 14-Mar-96 | 14-Mar-96 |
| **Sample Type**[1] | | | GW | K | GW | GW | N |
| **Metals** | **Method** | **MCL**[2] | | | | | |
| Aluminum | 6010 | 1 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 |
| Arsenic | 7060 | 0.05 | ND<0.00299 | ND<0.00299 | **0.00370** | ND<0.00299 | ND<0.00299 |
| Barium | 6010 | 1 | **0.161** | **0.165** | **0.0240** | **0.0511** | **0.00198** |
| Cadmium | 6010 | 0.005 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 |
| Chromium | 6010 | 0.05 | **0.00551** | **0.00526** | ND<0.0018 | ND<0.0018 | ND<0.0018 |
| Copper | 6010 | 1 [a] | **0.00694** | **0.00356** | **0.00615** | **0.00930** | **0.00495** |
| Iron | 6010 | 0.30 [a] | ND<0.0225 | **0.0299** | **0.0513** | **0.0447** | **0.0330** |
| Lead | 7421 | 0.05 | **0.00108** | ND<0.00636 | **0.000870** | **0.000870** | **0.003840** |
| Manganese | 6010 | 0.05 [a] | **0.00270** | **0.00303** | **0.00213** | **0.00737** | **0.00225** |
| Mercury | 7470 | 0.002 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 |
| Nickel | 6010 | 0.1 | **0.00590** | **0.00644** | ND<0.0047 | ND<0.0047 | ND<0.0047 |
| Zinc | 6010 | 5 [a] | **0.0312** | **0.0178** | ND<0.0175 | ND<0.0175 | ND<0.0175 |
| **General Minerals** | | | | | | | |
| Calcium | 6010 | -- | **75.0** | **76.8** | **10.4** | **36.1** | **0.564** |
| Magnesium | 6010 | -- | **16.3** | **16.6** | **9.75** | **12.6** | **0.183** |
| Potassium | 6010 | -- | **4.06** | **4.08** | **5.50** | **4.37** | ND<0.358 |
| Sodium | 6010 | -- | **19.6** | **19.8** | **58.8** | **15.2** | **0.547** |
| Chloride | 300.0 | 250 [a] | **21** | **21** | **19** | **13** | ND<0.25 |
| Nitrate (as N) | 300.0 | 10 | **5.2** | **5.1** | **0.95** | **1.8** | ND<0.25 |
| Nitrite (as N) | 300.0 | 1 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 | ND<0.25 |
| Sulfate | 300.0 | 250 [a] | **36** | **36** | **32** | **43** | ND<1.0 |
| Bicarbonate Alk. | 310.1 | -- | **240** | **240** | **100** | **120** | **4.0** |
| Carbonate Alk. | 310.1 | -- | ND<1.0 | ND<1.0 | **39** | ND<1.0 | ND<1.0 |
| TDS | 160.1 | 500 [a,b] | **410** | **410** | **280** | **260** | **16** |
| TSS | 160.2 | -- | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 |
| Hardness | 130.2 | -- | **290** | **300** | **80** | **160** | **12** |
| **Radon** $^{222}$ (pCi/l) | 913 | 300 [b,c] | **284** | **312** | **65** | **94** | NA |

***Notes:***
**All concentrations are in mg/l unless otherwise indicated.**
[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
N = Equipment decontamination rinsate blank
[2] California Maximum Contaminant Level (as of 12/95)
ND = Not detected at a concentration greater than the limit indicated.

[a] Secondary MCL
[b] Federal MCL
[c] Proposed MCL
bgs = below ground surface
NA = Not analyzed



**CDM** Camp Dresser & McKee
2581-112\sprdshts\5_11ALL.XLS
11/22/96

## Table 4-17
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - Metals and General Minerals
MW5-13

| Well ID | | | MW51303 | MW51302 | MW51301 |
|---|---|---|---|---|---|
| Sample Depth (feet bgs) | | | 340 - 350 | 520 - 530 | 684 - 694 |
| Sample Date | | | 14-Mar-96 | 14-Mar-96 | 14-Mar-96 |
| Sample Type[1] | | | GW | GW | GW |
| **Metals** | **Method** | **MCL[2]** | | | |
| Aluminum | 6010 | 1 | ND<0.0437 | ND<0.0437 | ND<0.0437 |
| Arsenic | 7060 | 0.05 | ND<0.00299 | ND<0.00299 | ND<0.00299 |
| Barium | 6010 | 1 | **0.126** | **0.0608** | **0.0347** |
| Cadmium | 6010 | 0.005 | ND<0.0017 | ND<0.0017 | ND<0.0017 |
| Chromium | 6010 | 0.05 | **0.0119** | ND<0.0018 | ND<0.0018 |
| Copper | 6010 | 1 [a] | **0.00275** | **0.00553** | **0.00278** |
| Iron | 6010 | 0.30 [a] | **0.0258** | **0.0746** | **0.0399** |
| Lead | 7421 | 0.05 | **0.000750** | **0.000660** | **0.00163** |
| Manganese | 6010 | 0.05 [a] | **0.00672** | **0.0145** | **0.00499** |
| Mercury | 7470 | 0.002 | ND<0.000173 | ND<0.000173 | ND<0.000173 |
| Nickel | 6010 | 0.1 | ND<0.0047 | **0.00486** | ND<0.0047 |
| Zinc | 6010 | 5 [a] | **0.0176** | ND<0.0175 | ND<0.0175 |
| **General Minerals** | | | | | |
| Calcium | 6010 | -- | **60.9** | **53.9** | **17.5** |
| Magnesium | 6010 | -- | **13.0** | **12.5** | **9.46** |
| Potassium | 6010 | -- | **3.40** | **4.40** | **4.66** |
| Sodium | 6010 | -- | **18.3** | **27.8** | **45.1** |
| Chloride | 300.0 | 250 [a] | **13** | **31** | **20** |
| Nitrate (as N) | 300.0 | 10 | **8.3** | **4.4** | ND<0.25 |
| Nitrite (as N) | 300.0 | 1 | ND<0.25 | ND<0.25 | ND<0.25 |
| Sulfate | 300.0 | 250 [a] | **24** | **41** | **41** |
| Bicarbonate Alk. | 310.1 | -- | **200** | **170** | **120** |
| Carbonate Alk. | 310.1 | -- | ND<1.0 | ND<1.0 | **5.0** |
| TDS | 160.1 | 500 [a,b] | **350** | **350** | **270** |
| TSS | 160.2 | -- | ND<10 | ND<10 | ND<10 |
| Hardness | 130.2 | -- | **170** | **200** | **100** |
| **Radon [222] (pCi/l)** | 913 | 300 [b,c] | **177** | **127** | **69** |

***Notes:***

**All concentrations are in mg/l unless otherwise indicated.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- N = Equipment decontamination rinsate blank

[2] California Maximum Contaminant Level (as of 12/95)

ND = Not detected at a concentration greater than the limit indicated.

[a] Secondary MCL
[b] Federal MCL
[c] Proposed MCL
bgs = below ground surface
NA = Not analyzed

**CDM** Camp Dresser & McKee
2581-112\sprdshts\5_13ALL.XLS
11/25/96

Table 4-18
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - Metals and General Minerals
MW5-15

| Well ID | | | MW51503 | | MW51502 | MW51501 | MW51502N |
|---|---|---|---|---|---|---|---|
| Port Depth (feet bgs) | | | 235 - 245 | | 450 - 460 | 670 - 680 | -- |
| Sample Date | | | 23-Sep-96 | 23-Sep-96 | 23-Sep-96 | 23-Sep-96 | 23-Sep-96 |
| Sample Type[1] | | | GW | K | GW | GW | N |
| **Metals** | **Method** | **MCL[2]** | | | | | |
| Aluminum | 6010 | 1 | ND<0.020 | ND<0.020 | ND<0.020 | ND<0.020 | ND<0.020 |
| Arsenic | 7060 | 0.05 | ND<0.010 | ND<0.010 | ND<0.010 | ND<0.010 | ND<0.010 |
| Barium | 6010 | 1 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.20 | ND<0.20 |
| Cadmium | 6010 | 0.005 | ND<0.0050 | ND<0.0050 | ND<0.0050 | ND<0.0050 | ND<0.0050 |
| Chromium | 6010 | 0.05 | ND<0.010 | ND<0.010 | ND<0.010 | ND<0.010 | ND<0.010 |
| Copper | 6010 | 1 [a] | ND<0.025 | ND<0.025 | ND<0.025 | ND<0.025 | ND<0.025 |
| Iron | 6010 | 0.30 [a] | ND<0.10 | **0.11** | ND<0.10 | ND<0.10 | ND<0.10 |
| Lead | 7421 | 0.05 | ND<0.0030 | ND<0.0030 | ND<0.0030 | **0.0053** | ND<0.0030 |
| Manganese | 6010 | 0.05 [a] | ND<0.015 | ND<0.015 | ND<0.015 | ND<0.015 | ND<0.015 |
| Mercury | 7470 | 0.002 | ND<0.00020 | ND<0.00020 | ND<0.00020 | **0.0011** | ND<0.00020 |
| Nickel | 6010 | 0.1 | ND<0.040 | ND<0.040 | ND<0.040 | ND<0.040 | ND<0.040 |
| Zinc | 6010 | 5 [a] | ND<0.020 | **0.024** | **0.02** | **0.032** | ND<0.020 |
| **General Minerals** | | | | | | | |
| Calcium | 6010 | -- | **67** | **72.9** | **79.1** | **77.4** | ND<5.0 |
| Magnesium | 6010 | -- | **14.9** | **16.3** | **14.7** | **13.1** | ND<5.0 |
| Potassium | 6010 | -- | ND<5.0 | ND<5.0 | ND<5.0 | ND<5.0 | ND<5.0 |
| Sodium | 6010 | -- | **14.7** | **15.8** | **14** | **13.3** | ND<5.0 |
| Chloride | 300.0 | 250 [a] | **25.8** | **25.3** | **15** | **10** | ND<0.10 |
| Sulfate | 300.0 | 250 [a] | **40.7** | **40.6** | **46.2** | **58.2** | ND<0.20 |
| Nitrite | 300.0 | 10 | ND<0.050 | ND<0.050 | ND<0.050 | ND<0.050 | ND<0.050 |
| Nitrate | 300.0 | 1 | **3** | **3** | **3.8** | **3.3** | ND<0.050 |
| Bicarbonate Alk. | 310.1 | -- | **172** | **174** | **197** | **193** | ND<4.0 |
| Carbonate Alk. | 310.1 | -- | ND<4.0 | ND<4.0 | ND<4.0 | ND<4.0 | ND<4.0 |
| Hydroxide Alk. | 310.1 | -- | ND<4.0 | ND<4.0 | ND<4.0 | ND<4.0 | ND<4.0 |
| TDS | 160.1 | 500 [a,b] | **318** | **326** | **342** | **332** | ND<10.0 |
| TSS | 160.2 | -- | ND<10.0 | ND<10.0 | ND<10.0 | ND<10.0 | ND<10.0 |
| Hardness (as CaC | 130.2 | -- | **228** | **234** | **258** | **255** | ND<2.0 |
| Radon $^{222}$ (pCi/l) | 913 | 300 [b,c] | **100** | **160** | **99** | **234** | **42** |

***Notes:***

**All concentrations are mg/l unless otherwise indicated.**

[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
N = Equipment decontamination rinsate blank

ND = Not detected at a concentration greater than the limit indicated.

NA = Not analyzed
[2] California Maximum Contaminant Level (a
[a] Secondary MCL
[b] Federal MCL
[c] Proposed MCL
bgs = below ground surface

**Table 4-19**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - Metals and General Minerals
MW5-17

| Well ID | | | MW51703 | MW51702 | MW51701 | QC Sample MW51703N |
|---|---|---|---|---|---|---|
| *Sample Depth (feet bgs)* | | | *305 - 315* | *540 - 550* | *698 - 708* | --- |
| **Sample Date** | | | 15-Mar-96 | 15-Mar-96 | 15-Mar-96 | 15-Mar-96 |
| **Sample Type[1]** | | | GW | GW | GW | N |
| **Metals** | **Method** | **MCL[2]** | | | | |
| Aluminum | 6010 | 1 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 |
| Arsenic | 7060 | 0.05 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 |
| Barium | 6010 | 1 | **0.176** | **0.112** | **0.0722** | **0.00183** |
| Cadmium | 6010 | 0.005 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 |
| Chromium | 6010 | 0.05 | **0.00321** | ND<0.0018 | ND<0.0018 | ND<0.0018 |
| Copper | 6010 | 1 [a] | **0.00610** | **0.00806** | **0.00493** | **0.00604** |
| Iron | 6010 | 0.30 [a] | **0.0290** | **0.0748** | **0.0487** | **0.0243** |
| Lead | 7421 | 0.05 | **0.000690** | **0.000790** | ND<0.000636 | **0.00071** |
| Manganese | 6010 | 0.05 [a] | **0.00545** | **0.00881** | **0.00749** | ND<0.002 |
| Mercury | 7470 | 0.002 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 |
| Nickel | 6010 | 0.1 | **0.00633** | **0.00584** | ND<0.0047 | ND<0.0047 |
| Zinc | 6010 | 5 [a] | **0.0176** | **0.0186** | ND<0.0175 | ND<0.0175 |
| **General Minerals** | | | | | | |
| Calcium | 6010 | -- | **72.9** | **59.8** | **40.7** | **0.601** |
| Magnesium | 6010 | -- | **16.5** | **12.9** | **10.3** | **0.172** |
| Potassium | 6010 | -- | **3.90** | **3.61** | **3.58** | ND<0.358 |
| Sodium | 6010 | -- | **30.5** | **25.7** | **32.0** | **0.519** |
| Chloride | 300.0 | 250 [a] | **31** | **56** | **20** | ND<0.25 |
| Nitrate (as N) | 300.0 | 10 | **7.6** | **2.8** | **1.5** | ND<0.25 |
| Nitrite (as N) | 300.0 | 1 | ND<0.25 | ND<0.25 | **0.91** | ND<0.25 |
| Sulfate | 300.0 | 250 [a] | **35** | **47** | **41** | ND<1.0 |
| Bicarbonate Alk. | 310.1 | -- | **250** | **140** | **140** | **3.2** |
| Carbonate Alk. | 310.1 | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| TDS | 160.1 | 500 [a,b] | **440** | **360** | **320** | **13** |
| TSS | 160.2 | -- | ND<10 | ND<10 | ND<10 | ND<10 |
| Hardness | 130.2 | -- | **270** | **240** | **160** | **8.0** |
| Radon $^{222}$ (pCi/l) | 913 | 300 [b,c] | **142** | **395** | **116** | NA |

***Notes:***
**All concentrations are in mg/l unless otherwise indicated.**
[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
N = Equipment decontamination rinsate blank
[2] California Maximum Contaminant Level (as of 12/95)
ND = Not detected at a concentration greater than the limit indicated.

[a] Secondary MCL
[b] Federal MCL
[c] Proposed MCL
bgs = below ground surface
NA = Not analyzed

**Table 4-20**
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - Metals and General Minerals
MW5-18

| Well ID | | | MW51803 | MW51802 | MW51801 |
|---|---|---|---|---|---|
| **Sample Depth (feet bgs)** | | | 500 - 510 | 630 - 640 | 780 -790 |
| **Sample Date** | | | 23-Sep-96 | 23-Sep-96 | 23-Sep-96 |
| **Sample Type[1]** | | | GW | GW | GW |
| **Metals** | **Method** | **MCL[2]** | | | |
| Aluminum | 6010 | 1 | ND<0.20 | ND<0.20 | ND<0.20 |
| Arsenic | 7060 | 0.05 | ND<0.010 | ND<0.010 | ND<0.010 |
| Barium | 6010 | 1 | ND<0.20 | ND<0.20 | ND<0.20 |
| Cadmium | 6010 | 0.005 | ND<0.0050 | ND<0.0050 | ND<0.0050 |
| Chromium | 6010 | 0.05 | ND<0.010 | ND<0.010 | ND<0.010 |
| Copper | 6010 | 1 [a] | ND<0.025 | ND<0.025 | ND<0.025 |
| Iron | 6010 | 0.30 [a] | ND<0.10 | ND<0.10 | ND<0.10 |
| Lead | 7421 | 0.05 | **0.003** | ND<0.0030 | ND<0.0030 |
| *Manganese* | *6010* | *0.05 [a]* | ***0.086*** | *ND<0.015* | *ND<0.015* |
| Mercury | 7470 | 0.002 | ND<0.00020 | **0.0015** | ND<0.00020 |
| Nickel | 6010 | 0.1 | ND<0.040 | ND<0.040 | ND<0.040 |
| Zinc | 6010 | 5 [a] | **0.024** | **0.02** | ND<0.020 |
| **General Minerals** | | | | | |
| Calcium | 6010 | -- | **117** | **79.5** | **52.8** |
| Magnesium | 6010 | -- | **21.4** | **14.8** | **12.5** |
| Potassium | 6010 | -- | **5.4** | ND<5.0 | ND<5.0 |
| Sodium | 6010 | -- | **17.3** | **13.2** | **21.9** |
| Chloride | 300.0 | 250 [a] | **28.5** | **13.8** | **8.2** |
| Nitrate (as N) | 300.0 | 10 | **2.2** | **7.7** | **3.0** |
| Nitrite (as N) | 300.0 | 1 | **0.66** | ND<0.050 | ND<0.050 |
| Sulfate | 300.0 | 250 [a] | **38.6** | **33.6** | **34** |
| Bicarbonate Alk. | 310.1 | -- | **318** | **205** | **205** |
| Carbonate Alk. | 310.1 | -- | ND<4.0 | ND<4.0 | ND<4.0 |
| Hydroxide Alk. | 310.1 | -- | ND<4.0 | ND<4.0 | ND<4.0 |
| TDS | 160.1 | 500 [a,b] | **447** | **337** | **272** |
| TSS | 160.2 | -- | ND<10.0 | ND<10.0 | ND<10.0 |
| Hardness (as Ca | 130.2 | -- | **389** | **274** | **196** |
| **Radon [222] (pCi/l)** | 913 | 300 [b,c] | **120** | **161** | **141** |

***Notes:***
**All concentrations are in mg/l unless otherwise indicated.**
[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
N = Equipment decontamination rinsate blank
[2] *California Maximum Contaminant Level (as of 12/95)*
ND = Not detected at a concentration greater than the limit indicated.

[a] Secondary MCL
[b] Federal MCL
[c] Proposed MCL
bgs = below ground surface
NA = Not analyzed

# Table 4-21
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - Metals and General Minerals
Additional Existing Wells

| Well Owner | | ALRC/TMC | CalMat Co. | Cov. Irr. Co. | Glendora | LA County | La Puente Valley County Water District | | | San Gabriel Valley Water Company | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well Recordation No. | | 11900038 | 01902920 | 01900882 | 01900831 | 08000070 | 01901460 | 01902859 | 08000062 | 51902858 | 71903093 | 78000098 |
| Well Status | | Active | Active | Active | Inactive | Active | Active | Active | Active | Active | Active | Active |
| Well Name | | MW-4/AZ-2 | E-Durbin | Baldwin 3 | 7G | Santa Fe 1 | 2 | 3 | 4 | B4B | B6C | B6D |
| Screen Interval (feet bgs) | | 350-614 | 238-314<br>366-484 | 198-251<br>278-484 | 252-474 | 290-435 | 600-947 | 620-770 | 550-725 | 920-940<br>950-1154 | 275-420, 440-465<br>480-506 | 760-1032 |
| Sampler | | GeoSyntec | CDM | CDM | GeoSyntec | CDM | CDM | CDM | CDM | CDM | CDM | CDM |
| Sample Date | | 12-Mar-96 | 10-Apr-96 | 17-Oct-96 | 27-Mar-96 | 15-Mar-96 | 10-Apr-96 | 10-Apr-96 | 10-Apr-96 | 2-Apr-96 | 2-Apr-96 | 2-Apr-96 |
| Sample Type[1] | | GW | GW | GW | GW | GW | GW | GW | GW | GW | GW | GW |
| **Metals** | MCL[2] | | | | | | | | | | | |
| Aluminum | 1 | ND<0.1 | ND<0.0437 | ND<0.20 | ND<0.1 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | **0.0549** |
| Arsenic | 0.05 | **0.0019** | ND<0.00299 | ND<0.010 | ND<0.001 | **0.00310** | ND<0.00299 | ND<0.00299 | ND<0.00299 | **0.00329** | **0.00319** | ND<0.00299 |
| Barium | 1 | **0.12** | **0.109** | ND<0.20 | **0.08** | **0.122** | **0.0917** | **0.0872** | **0.0939** | **0.100** | **0.139** | **0.107** |
| Cadmium | 0.005 | ND<0.0003 | ND<0.0017 | ND<0.0050 | ND<0.0003 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 |
| Chromium | 0.05 | ND<0.03 | ND<0.0018 | ND<0.010 | ND<0.03 | ND<0.0018 | **0.00663** | **0.00420** | **0.00574** | **0.00329** | **0.00398** | **0.00448** |
| Copper | 1 [a] | ND<0.05 | **0.00420** | ND<0.025 | ND<0.05 | **0.01090** | **0.00862** | **0.00782** | **0.00799** | **0.00855** | **0.00531** | **0.00907** |
| Iron | 0.30 [a] | ND<0.1 | ND<0.0225 | ND<0.10 | **0.2** | **0.0238** | **0.0451** | ND<0.0225 | ND<0.0225 | **0.0326** | **0.0297** | **0.177** |
| Lead | 0.05 | ND<0.005 | **0.000860** | ND<0.0030 | **0.012** | **0.00279** | **0.00235** | **0.00222** | **0.00173** | ND<0.000636 | **0.00136** | ND<0.000636 |
| Manganese | 0.05 [a] | **0.09** | **0.00201** | ND<0.015 | ND<0.01 | ND<0.002 | ND<0.002 | ND<0.002 | **0.00305** | ND<0.002 | ND<0.002 | ND<0.002 |
| Mercury | 0.002 | ND<0.001 | ND<0.000173 | ND<0.00020 | ND<0.001 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 |
| Nickel | 0.1 | ND<0.04 | ND<0.00470 | ND<0.040 | ND<0.04 | ND<0.00470 | ND<0.00470 | ND<0.00470 | ND<0.00470 | ND<0.0047 | ND<0.0047 | ND<0.0047 |
| Zinc | 5 [a] | **0.03** | **0.0209** | **0.036** | **0.07** | **0.0281** | **0.0197** | ND<0.0175 | **0.0236** | ND<0.0175 | ND<0.0175 | **0.0189** |
| **General Minerals** | | | | | | | | | | | | |
| Calcium | -- | **115** | **50.3** | **66** | **106** | **54.9** | **50.1** | **52.8** | **52.2** | **55.7** | **76.4** | **54.7** |
| Magnesium | -- | **19.9** | **10.5** | **13.3** | **17.8** | **12.2** | **13.0** | **13.4** | **13.6** | **11.8** | **14.0** | **13.0** |
| Potassium | -- | **4.0** | **2.99** | ND<5.0 | **3.1** | **2.88** | **2.38** | **2.21** | **2.35** | **2.73** | **3.76** | **2.74** |
| Sodium | -- | **18.1** | **9.00** | **19.6** | **17.2** | **15.5** | **21.4** | **20.3** | **20.4** | **16.5** | **18.3** | **21.2** |
| Chloride | 250 [a] | **30** | **7.7** | **61.6** | **26** | **18** | **13** | **13** | **13** | **19** | **21** | **18** |
| Sulfate | 250 [a] | **55** | **17** | **61.1** | **66** | **33** | **22** | **23** | **25** | **22** | **36** | **24** |
| Bicarbonate Alk. | -- | **280** | **170** | **113** | **248** | **170** | **190** | **190** | **190** | **160** | **170** | **180** |
| Carbonate Alk. | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Hydroxide Alk. | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| TDS | 500 [a,b] | **454** | **230** | **366** | **454** | **300** | **300** | **310** | **320** | **260** | **350** | **290** |
| TSS | -- | **4** | ND<10 | ND<1.0 | **3** | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 |
| Hardness | -- | **328** | **180** | **241** | **336** | **210** | **190** | **210** | **220** | **220** | **250** | **200** |
| Radon $^{222}$ (pCi/l) | 300 [b,c] | **334** | **238** | --- | **237** | **271** | **280** | **222** | **208** | **138** | **189** | **162** |

***Notes:***

**All concentrations are in mg/l unless otherwise indicated.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- NS = No sample collected

[2] California Maximum Contaminant Level (as of 12/95)
- [a] Secondary MCL
- [b] Federal MCL
- [c] Proposed MCL
- -- No Standard

ND = Not detected at a concentration greater than the limit indicated.
NA = Not analyzed
bgs = below ground surface
Well Status:
- Active = Active Water Supply Well
- Inactive = Inactive Water Supply Well
- MW = Site Assessment Monitoring Well
- Obs = Observation Well

T[illegible]4-21

Baldwin Park Operable Unit

Summary of Groundwater Analytical Results - Metals and General Minerals

Additional Existing Wells

| Well Owner | | Suburban Water Systems | | | Valley County Water District | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well Recordation No. | | 01901598 | 08000069 | 08000095 | 01900028 | 01900029 | 01900031 | | 01900035 | | 08000060 | 08000039 |
| Well Status | | Active | Active | Active | Active | Inactive | Inactive | | Inactive | | Active | Inactive |
| Well Name | | 139W1 | 139W4 | 139W5 | W. Maine (2) | Morada (3) | Paddy Ln (5) | | B. Dalton (9) | | Lante (10) | Palm (11) |
| Screen Interval (feet bgs) | | 120-349 | 566-642, 676-695 787-825 | 750-1060 | 250-580 | 275-585 | 300-585 | | 250-582 | | 275-577 | 540-582, 594-602 |
| Sampler | | CDM | CDM | CDM | CDM | GeoSyntec | CDM | CDM | CDM | CDM | CDM | CDM |
| Sample Date | | 12-Apr-96 | 12-Apr-96 | 12-Apr-96 | 11-Apr-96 | 26-Mar-96 | 12-Jul-96 | 12-Jul-96 | 22-Mar-96 | 22-Mar-96 | 11-Apr-96 | 10-Jul-96 |
| Sample Type[1] | | GW | GW | GW | GW | GW | GW | K | GW | K | GW | GW |
| **Metals** | MCL[2] | | | | | | | | | | | |
| Aluminum | 1 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.0437 | ND<0.1 | ND<0.0437 | 0.0968 | ND<0.0437 | ND<0.0437 | ND<0.0437 | 0.0721 |
| Arsenic | 0.05 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.00299 | ND<0.001 | ND<0.00299 | ND<0.00299 | 0.00321 | ND<0.00299 | ND<0.00299 | ND<0.00299 |
| Barium | 1 | 0.212 | 0.0784 | 0.0810 | 0.0842 | 0.18 | 0.130 | 0.131 | 0.114 | 0.114 | 0.193 | 0.0971 |
| Cadmium | 0.005 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0003 | 0.00276 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 | ND<0.0017 |
| Chromium | 0.05 | ND<0.0018 | 0.00705 | 0.00524 | ND<0.0018 | ND<0.03 | 0.00194 | 0.00442 | 0.00484 | 0.00462 | 0.00380 | ND<0.0018 |
| Copper | 1[a] | 0.00851 | 0.00948 | 0.00858 | 0.00492 | ND<0.05 | 0.0129 | 0.0139 | ND<0.0027 | ND<0.0027 | 0.00760 | 0.0116 |
| Iron | 0.30[a] | 0.0320 | ND<0.0225 | ND<0.0225 | ND<0.0225 | ND<0.1 | 0.0552 | 0.195 | 0.920 | 2.07 | 0.0377 | 0.0944 |
| Lead | 0.05 | 0.00242 | 0.00320 | 0.00189 | 0.00170 | 0.005 | 0.00279 | 0.00251 | 0.00323 | 0.00476 | 0.00127 | 0.00232 |
| Manganese | 0.05[a] | ND<0.002 | 0.00644 | ND<0.002 | 0.00390 | ND<0.01 | 0.00631 | 0.00445 | 0.00785 | 0.0160 | ND<0.002 | 0.0169 |
| Mercury | 0.002 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.001 | ND<0.000173 | ND<0.000173 | ND<0.000173 | ND<0.000173 | 0.000230 | 0.000290 |
| Nickel | 0.1 | ND<0.0047 | ND<0.0047 | 0.00584 | ND<0.0047 | ND<0.04 | 0.00501 | 0.00631 | ND<0.0047 | ND<0.0047 | ND<0.0047 | ND<0.0047 |
| Zinc | 5[a] | 0.0177 | ND<0.0175 | ND<0.0175 | 0.0496 | ND<0.03 | 0.0910 | 0.0699 | 0.0304 | 0.0265 | ND<0.0175 | 0.0564 |
| **General Minerals** | | | | | | | | | | | | |
| Calcium | -- | 112 | 52.9 | 46.6 | 36.8 | 128 | 70.8 | 70.5 | 59.7 | 60.1 | 82.4 | 51.8 |
| Magnesium | -- | 25.5 | 13.2 | 11.2 | 8.07 | 21.8 | 13.1 | 13.1 | 10.4 | 10.4 | 18.5 | 9.46 |
| Potassium | -- | 4.36 | 2.02 | 2.43 | 2.66 | 3.8 | 4.02 | 3.96 | 3.44 | 3.51 | 4.23 | 3.00 |
| Sodium | -- | 26.4 | 20.1 | 23.3 | 9.43 | 20.8 | 12.8 | 12.7 | 16.6 | 16.3 | 26.0 | 9.61 |
| Chloride | 250[a] | 50 | 13 | 12 | 3.2 | 49 | 21 | 21 | 44 | 45 | 37 | 14 |
| Sulfate | 250[a] | 54 | 24 | 21 | 12 | 76 | 37 | 37 | 34 | 34 | 34 | 30 |
| Bicarbonate Alk. | -- | 280 | 170 | 190 | 140 | 294 | 210 | 200 | 130 | 130 | 260 | 150 |
| Carbonate Alk. | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Hydroxide Alk. | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| TDS | 500[a,b] | 600 | 320 | 290 | 190 | 508 | 340 | 360 | 280 | 300 | 450 | 250 |
| TSS | -- | ND<10 | ND<10 | ND<10 | ND<10 | ND<1 | 17 | ND<10 | ND<10 | ND<10 | ND<10 | ND<10 |
| Hardness | -- | 410 | 190 | 180 | 130 | 372 | 250 | 280 | 210 | 200 | 320 | 240 |
| Radon $^{222}$ (pCi/l) | 300[b,c] | 220 | 264 | 188 | 211 | 290 | 250 | 278 | 267 | 284 | 220 | 217 |

***Notes:***

**All concentrations are in mg/l unless otherwise indicated.**

[1] Sample Type:
- GW = Groundwater sample
- K = Duplicate (split) sample
- NS = No sample collected

[2] California Maximum Contaminant Level (as of 12/95)
- [a] Secondary MCL
- [b] Federal MCL
- [c] Proposed MCL
- -- No Standard

ND = Not detected at a concentration greater than the limit indicated.

NA = Not analyzed

bgs = below ground surface

Well Status:
- Active = Active Water Supply Well
- Inactive = Inactive Water Supply Well
- MW = Site Assessment Monitoring Well
- Obs = Observation Well

**CDM** Camp Dresser & McKee

2581-112\SPRDSHT\WELLDTA.XLS

12/11/96

T[illegible]-21
Baldwin Park Operable Unit
Summary of Groundwater Analytical Results - Metals and General Minerals
Additional Existing Wells

| Well Owner | | ALRC | | | | LA County | Norac | Polopolus |
|---|---|---|---|---|---|---|---|---|
| **Well Recordation No.** | | W11AZW01R | W11AZW03 | W11AZW09 | | Z1000006 | W10NCMW1 | 01902169 |
| **Well Status** | | MW | MW | MW | | Obs. Well | MW | Inactive Irrig. |
| **Well Name** | | MW-1R | MW-3 | MW-9 | | Key Well | 1 | 1 |
| **Screen Interval (feet bgs)** | | 258-455 | 180-385 | 195-450 | | 80-284 | 255-310 | 120-280 |
| **Sampler** | | GeoSyntec | GeoSyntec | GeoSyntec | CDM | CDM | GeoSyntec | CDM |
| **Sample Date** | | 14-Mar-96 | 13-Mar-96 | 13-Mar-96 | 13-Mar-96 | 19-Apr-96 | 15-Mar-96 | 27-Jun-96 |
| **Sample Type[1]** | | GW | GW | GW | K | GW | GW | GW |
| **Metals** | **MCL[2]** | | | | | | | |
| Aluminum | 1 | ND<0.1 | ND<0.1 | ND<0.1 | ND<0.0437 | ND<0.0437 | ND<0.1 | ND<0.0437 |
| Arsenic | 0.05 | **0.081** | **0.0018** | **0.0024** | ND<0.00299 | ND<0.00299 | **0.0014** | ND<0.00299 |
| Barium | 1 | **1.01** | **0.10** | **0.08** | **0.116** | **0.168** | **0.16** | **0.174** |
| Cadmium | 0.005 | ND<0.0003 | ND<0.0003 | ND<0.0003 | ND<0.0017 | ND<0.0017 | ND<0.0003 | ND<0.0017 |
| Chromium | 0.05 | ND<0.03 | ND<0.03 | ND<0.03 | **0.00921** | **0.00215** | **0.06** | ND<0.0018 |
| Copper | 1[a] | ND<0.05 | ND<0.05 | ND<0.05 | **0.0133** | **0.00477** | ND<0.05 | **0.0139** |
| Iron | 0.30[a] | **3.7** | **0.1** | ND<0.1 | **0.0340** | ND<0.0225 | **0.3** | **0.656** |
| Lead | 0.05 | **0.009** | ND<0.005 | ND<0.005 | **0.00739** | ND<0.000636 | ND<0.005 | **0.00482** |
| Manganese | 0.05[a] | **10.2** | ND<0.01 | ND<0.01 | **0.00590** | ND<0.002 | ND<0.01 | **0.0130** |
| Mercury | 0.002 | ND<0.001 | ND<0.001 | ND<0.001 | ND<0.000173 | ND<0.000173 | ND<0.001 | ND<0.000173 |
| Nickel | 0.1 | **0.04** | ND<0.04 | ND<0.04 | ND<0.0047 | ND<0.0047 | ND<0.04 | ND<0.0047 |
| Zinc | 5[a] | **4.82** | **0.05** | **0.21** | **0.262** | **0.0180** | ND<0.03 | **0.135** |
| **General Minerals** | | | | | | | | |
| Calcium | -- | **262** | **64.4** | **61.2** | **56.6** | **82.0** | **86.1** | **86.8** |
| Magnesium | -- | **55.8** | **14.6** | **11.2** | **10.5** | **16.6** | **18.6** | **17.3** |
| Potassium | -- | **8.2** | **3.8** | **3.7** | **3.35** | **3.60** | **5.1** | **4.09** |
| Sodium | -- | **120** | **13.5** | **12.2** | **11.9** | **11.4** | **23.9** | **14.2** |
| Chloride | 250[a] | **258** | **9** | **19** | **20** | **28** | **34** | **34** |
| Sulfate | 250[a] | **31** | **16** | **37** | **38** | **33** | **31** | **28** |
| Bicarbonate Alk. | -- | **708** | **204** | **130** | **130** | **220** | **240** | **230** |
| Carbonate Alk. | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| Hydroxide Alk. | -- | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| TDS | 500[a,b] | **1,280** | **264** | **258** | **260** | **390** | **438** | **380** |
| TSS | -- | **15** | ND<1 | **4** | ND<10 | ND<10 | **2** | ND<10 |
| Hardness | -- | **860** | **250** | **260** | **190** | **150** | **290** | **310** |
| Radon $^{222}$ (pCi/l) | 300[b,c] | **276** | **105** | NA | **116** | **274** | **318** | **193** |

***Notes:***
**All concentrations are in mg/l unless otherwise indicated.**

[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample
NS = No sample collected

[2] California Maximum Contaminant Level (as of 12/95)
[a] Secondary MCL
[b] Federal MCL
[c] Proposed MCL
-- No Standard

ND = Not detected at a concentration greater than the limit indicated.
NA = Not analyzed
bgs = below ground surface
Well Status:
Active = Active Water Supply Well
Inactive = Inactive Water Supply Well
MW = Site Assessment Monitoring Well
Obs = Observation Well

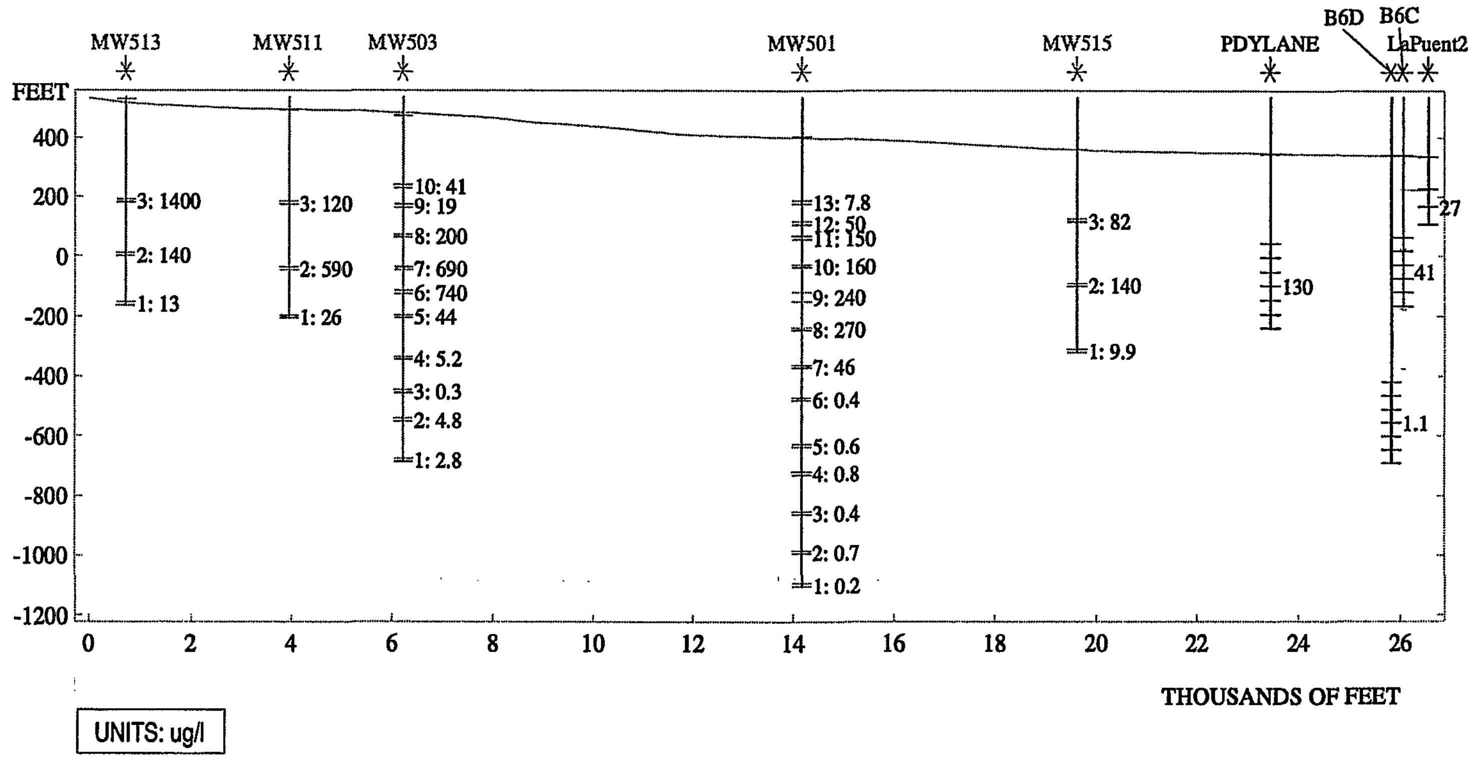
In addition, cross sections showing vertical and lateral trends in TCE, PCE, 1,2-DCA and CTC are shown on Figures 4-6 through 4-17. Contour maps for MCLs and ten times MCLs for TCE, PCE, 1,2-DCA and CTC are illustrated in Figures 4-18 through 4-21. The contour maps were generated using the maximum concentrations for each multiport well. The following discussion is based on the most recent sampling data; September/October 1996.

As shown on Plates 1 and 2 and Figures 4-1 through 4-8, the highest TCE concentrations are located in the northern portion of the OU. The maximum TCE concentration of 1400 µg/l was detected in the shallowest zone (191 feet above MSL, 340-350 feet bgs) in MW5-13, the northern most MP monitoring well in the OU. Moving downgradient (southwest), in the vicinity of MW5-11 and MW5-03, the higher concentrations were detected in the 500 to 600 foot intervals (590 µg/l at 530 to 540 feet bgs [-36 to -46 feet MSL] in MW5-11 and 690 µg/l and 740 µg/l in 510 to 520 [-36 to -46 feet MSL] and 590 to 600 feet bgs [-116 to -126 feet MSL], respectively, in MW5-03). However, TCE concentrations in MW5-17 and MW5-18 were generally lower. TCE concentrations in MW5-17 were generally below the MCL of 5 µg/l in the 540 to 550 (-31 to -41 feet MSL) and 698 to 708 feet bgs (-189 to -199 feet MSL) intervals and range from 130 to 240 µg/l in the 500 to 510 (-6 to -16 feet MSL) and 630 to 640 feet bgs (-136 to -146 feet MSL) intervals in MW5-18. TCE concentrations tend to decrease moving further downgradient as shown on cross section AA (Figure 4-6). As shown on Figure 4-6, which generally follows the axis of the plume, the base of the TCE contamination varies from approximately 700 feet (-170 feet MSL) in the north to approximately 800 feet (-336 to -340 feet MSL) in the vicinity of MW5-03 and MW5-01 to approximately 700 feet bgs (-320 feet MSL) in MW5-15.

Cross section BB, located in Subarea 3, and cross section CC, located in Subarea 1 (Figures 4-7 and 4-8) transect the axis of the plume. Cross section BB shows minor concentrations to the west at the Cal Mat East Durbin Well and MW5-08 (below the MCL in the deepest three intervals, greater than 554 feet bgs [-215 feet MSL]) and just over two times the MCL in the upper interval (380-390 feet bgs [-41 feet MSL]), increasing in the center of the plume to 160 µg/l in MW5-05 (at a depth of 380 feet bgs [-39 feet MSL]) and decreasing again to the southeast to concentrations of 15 µg/l and 0.2 µg/l at Big Dalton and the Suburban 139 well field, respectively.

Cross section CC, in the northern portion of the OU, also transects the plume. TCE concentrations in September were 1 µg/l in the western-most well, Santa Fe 1, increasing to 590 µg/l at a depth of 530 feet bgs (-36 feet MSL) in MW5-11 and then decreasing to 240 µg/l at a depth of 630 feet bgs (-136 feet MSL) in MW5-18 and 2.8 µg/l at the Morada Well to the east.

As discussed in Section 3, MW5-03, MW5-05, MW5-11 and MW5-17 were not purged prior to sampling. Therefore, the initial sampling results for these wells are not believed to be representative of the interval sampled. As shown on Figures 4-1 through 4-5, a comparison of the 30 day sampling results with the first, second and third quarterly sampling results indicates that TCE concentrations vary significantly in some intervals and remain relatively stable in others. Generally, the intervals with the higher concentrations appear to vary more.




CROSS SECTION AA

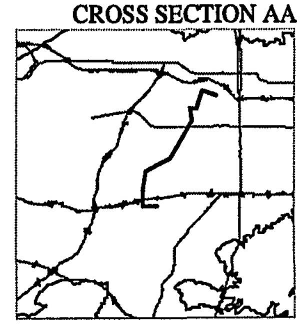
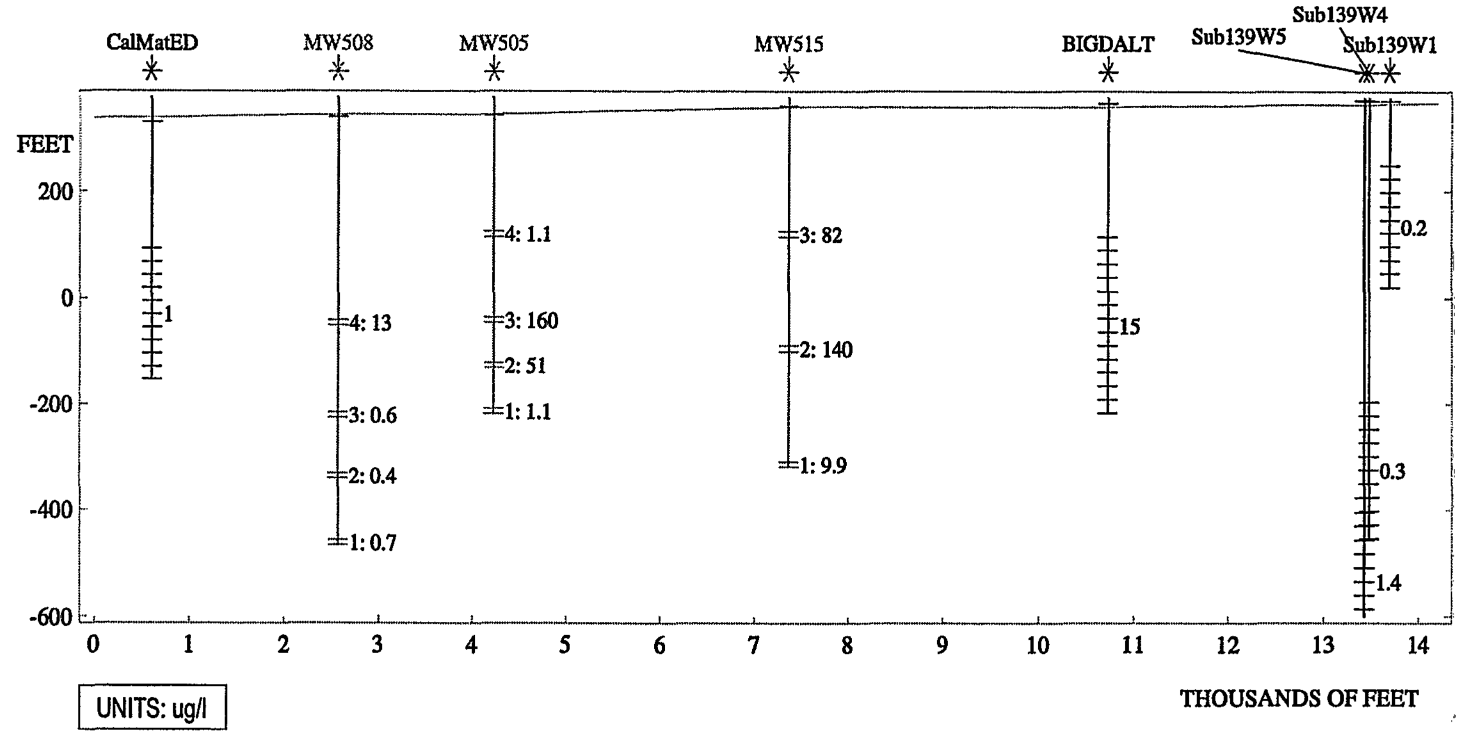


FIGURE 4-6

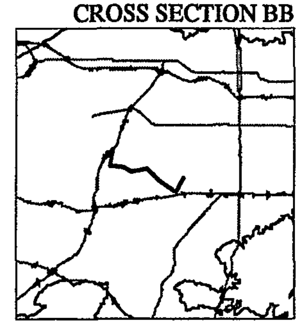
Cross Section Showing September-October 1996 TCE Values

Baldwin Park Operable Unit Pre-Remedial Design

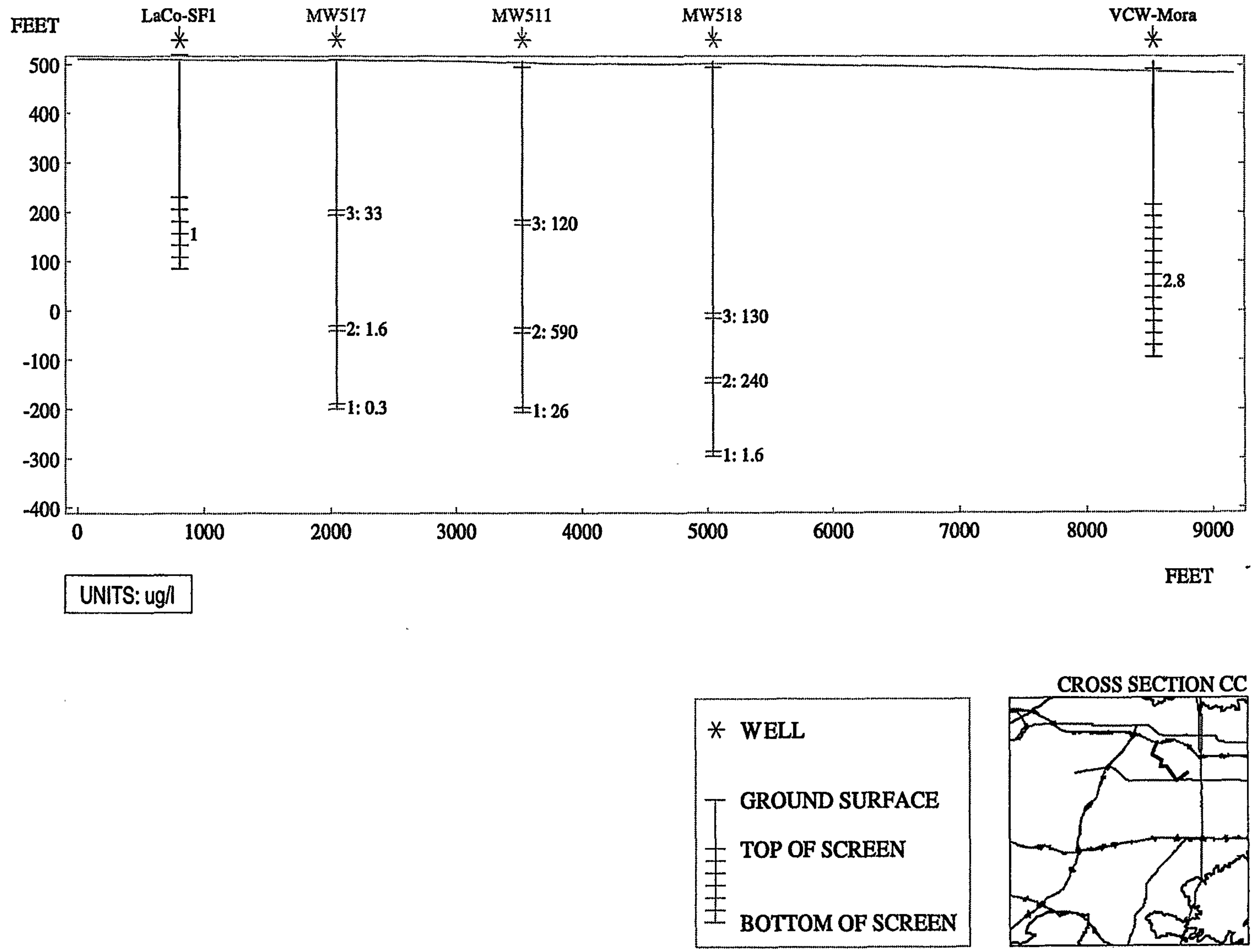
CDM
environmental engineers, scientists, planners, & management consultants



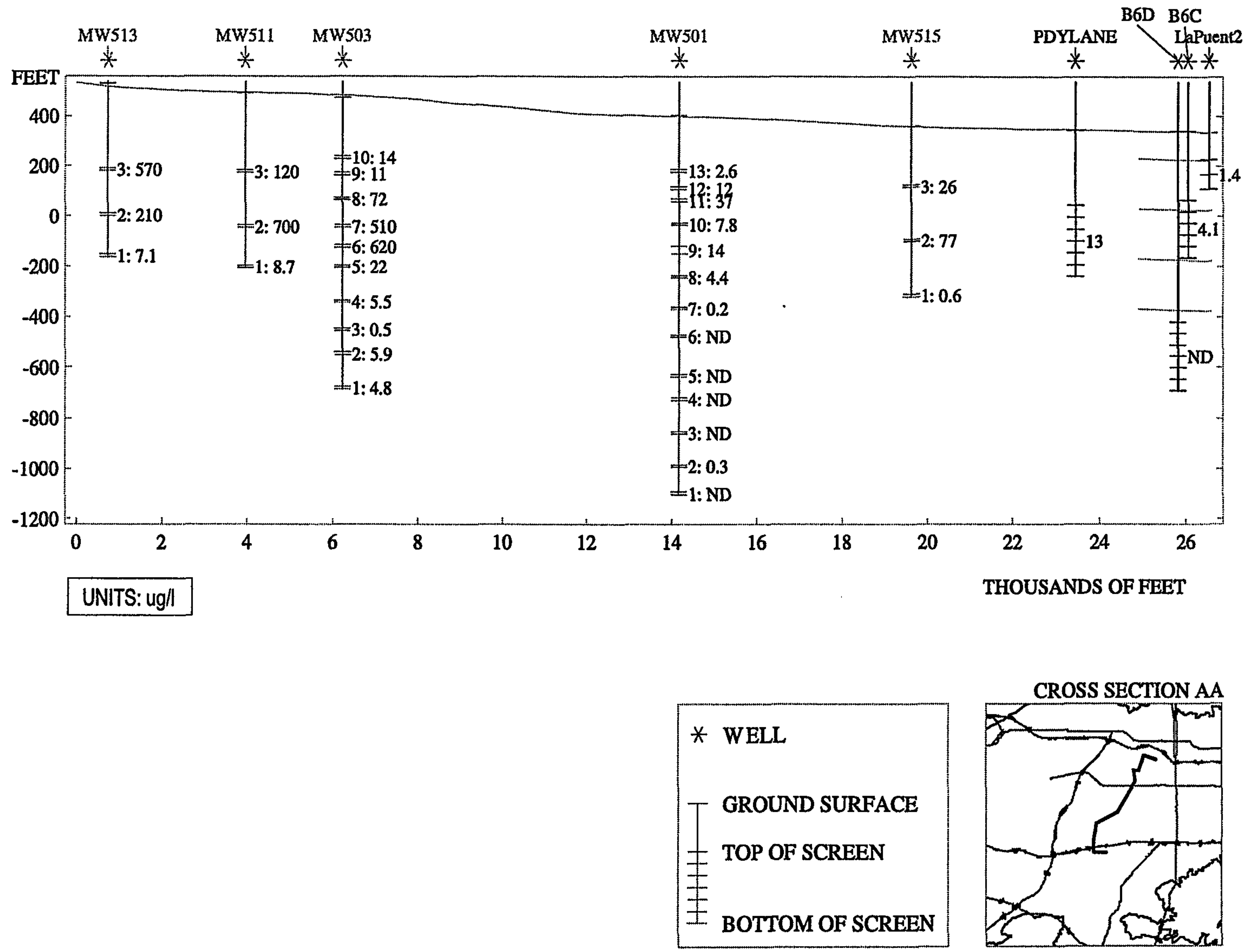

CROSS SECTION BB



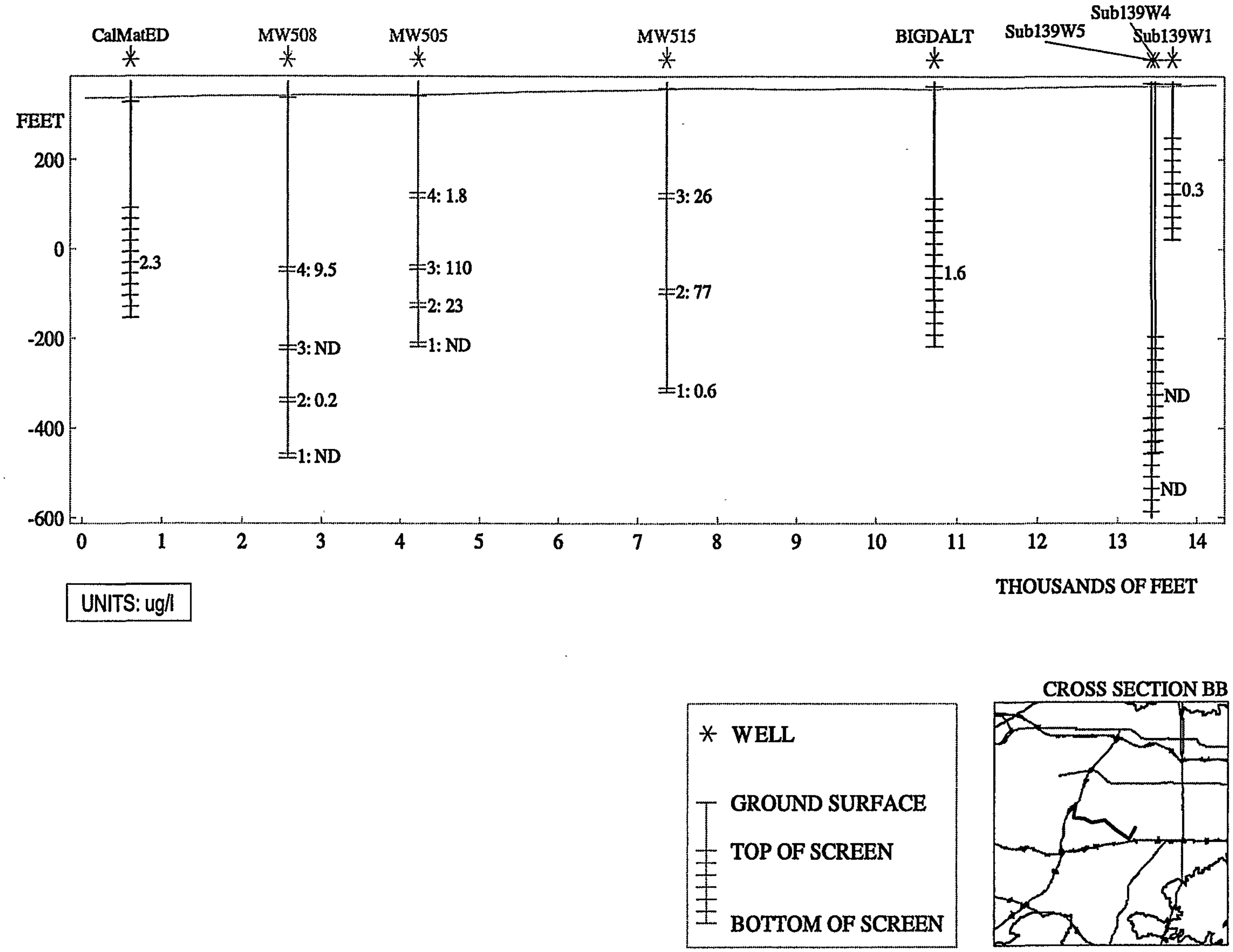
| FIGURE 4-7 | Cross Section Showing September-October 1996 TCE Values<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|



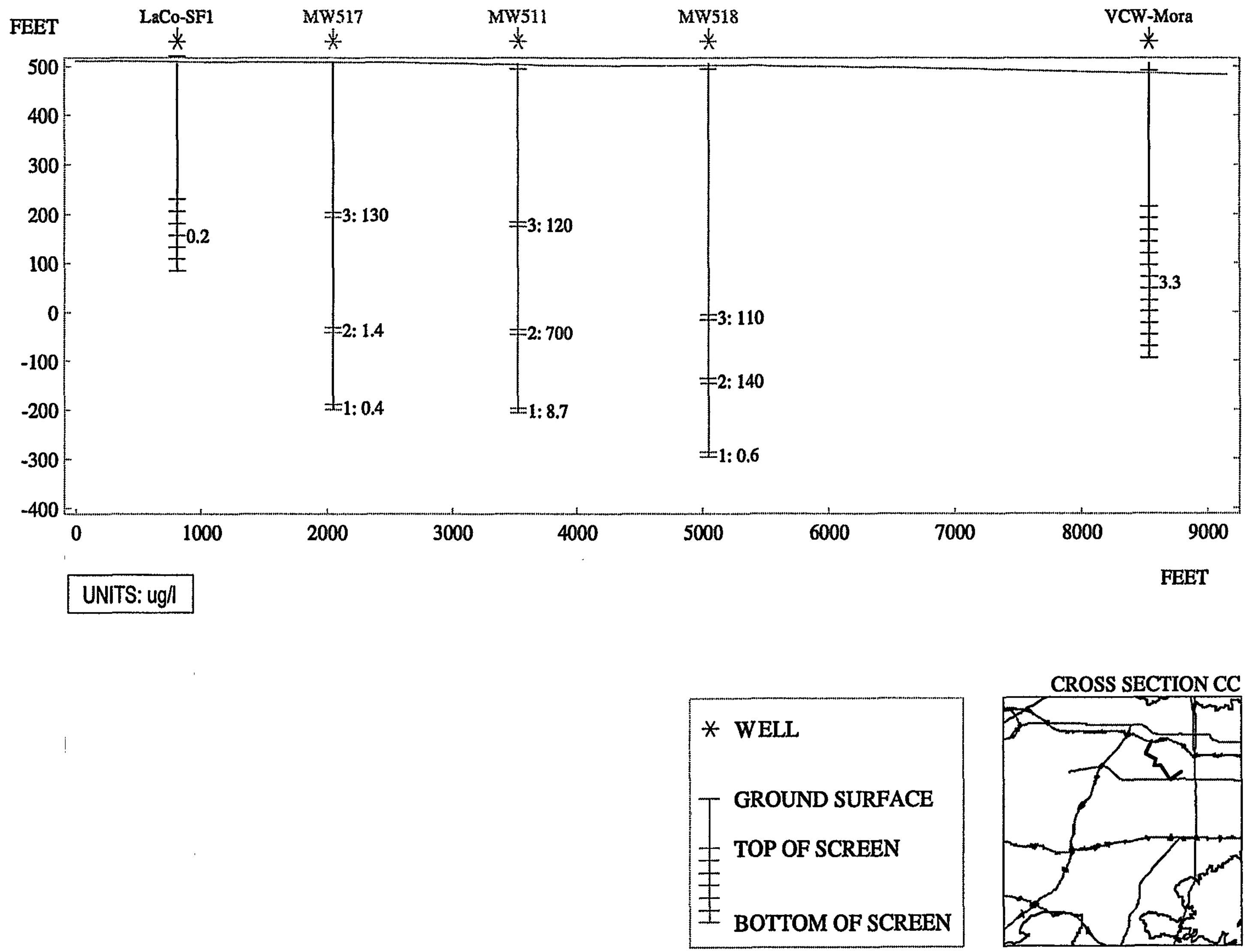

| FIGURE 4-8 | Cross Section Showing September-October TCE Values<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|



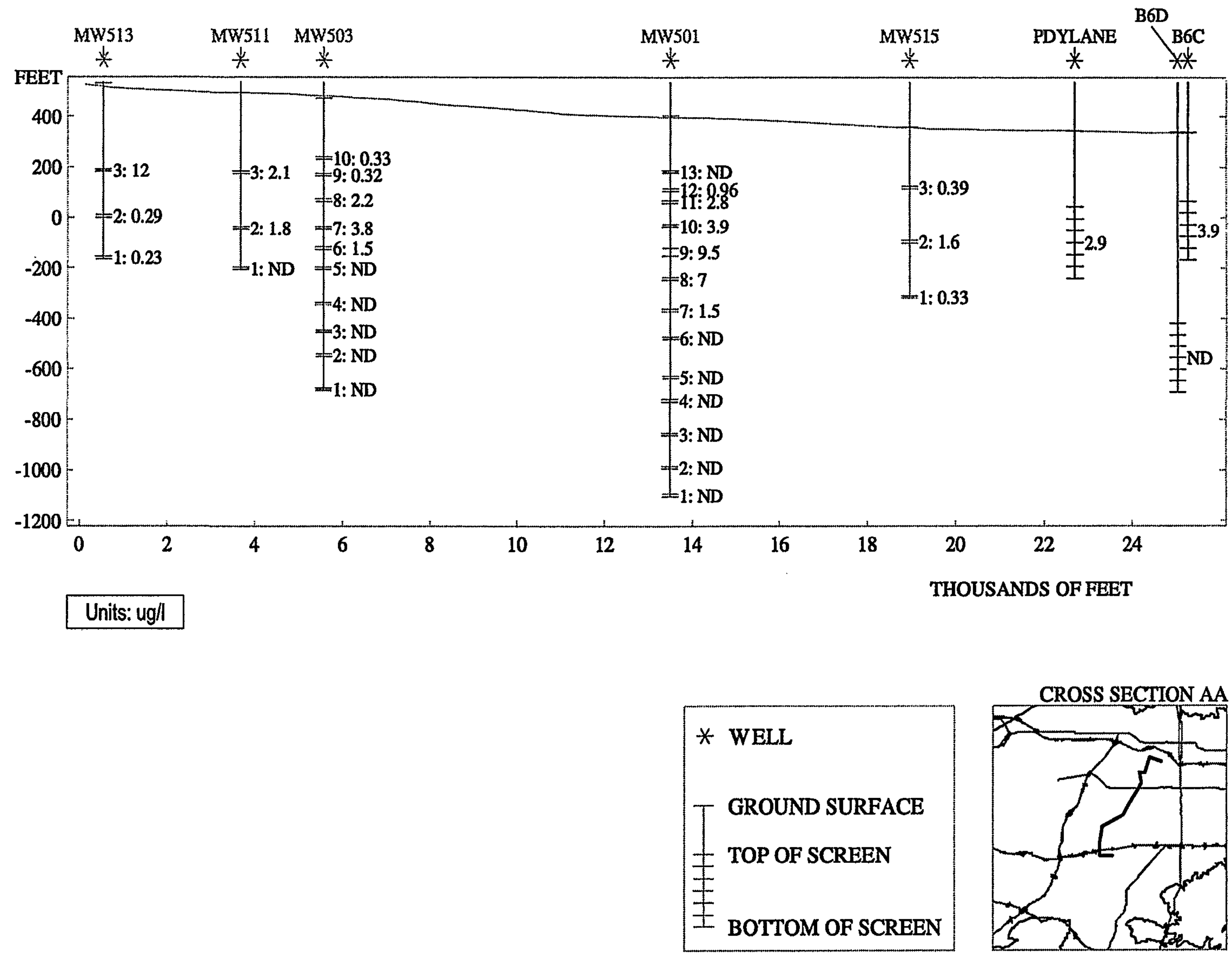

| FIGURE 4-9 | Cross Section Showing September-October 1996 PCE Values<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|




| FIGURE 4-10 | Cross Section Showing September-October 1996 PCE Values<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|




| FIGURE 4-11 | Cross Section Showing September-October PCE Values<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM environmental engineers, scientists, planners, & management consultants |
|---|---|---|




| FIGURE 4-12 | Cross Section Showing September-October 1996 1,2-DCA Values<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|

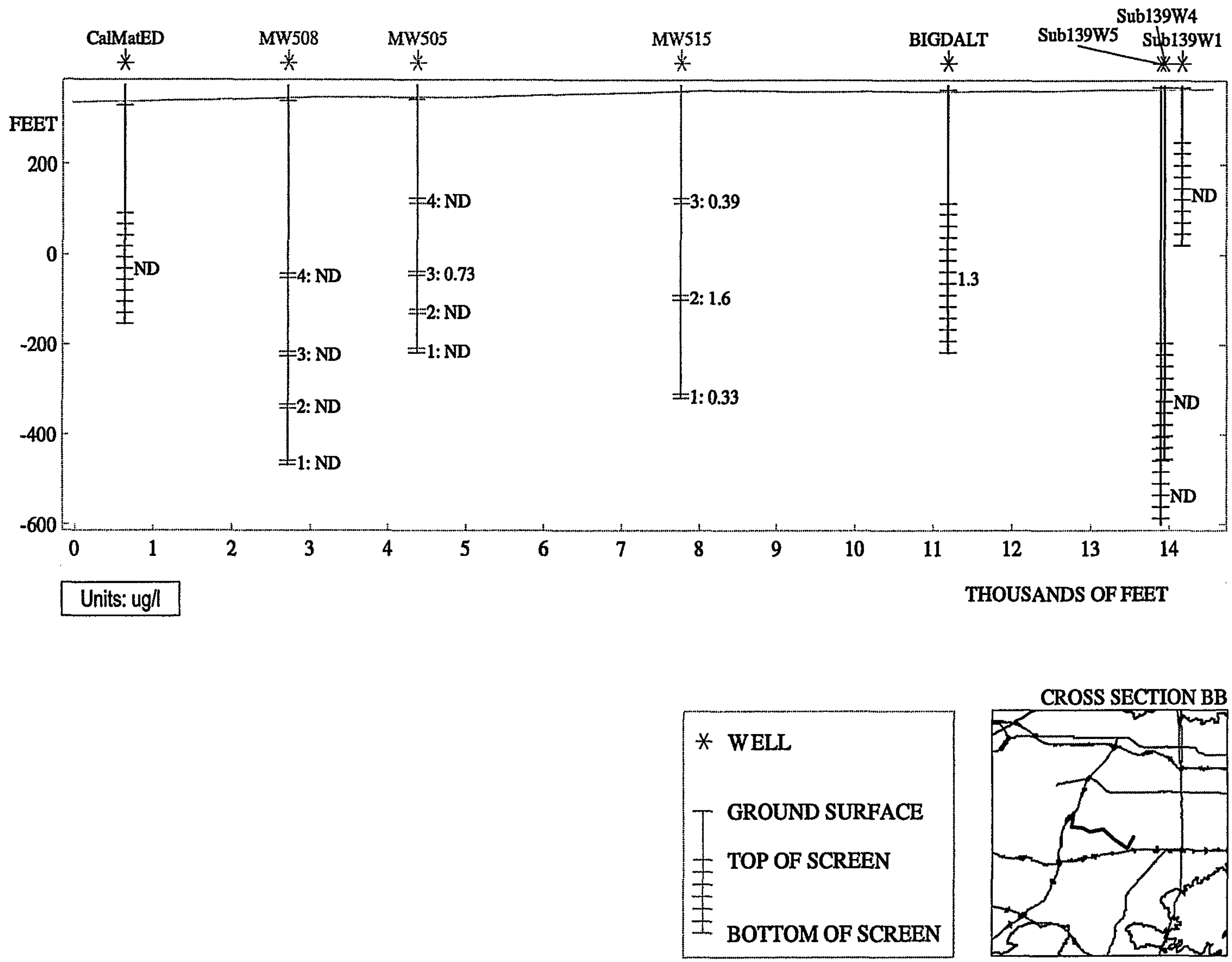



FIGURE 4-13

Cross Section Showing September-October 1996 1,2 DCA Values

Baldwin Park Operable Unit Pre-Remedial Design

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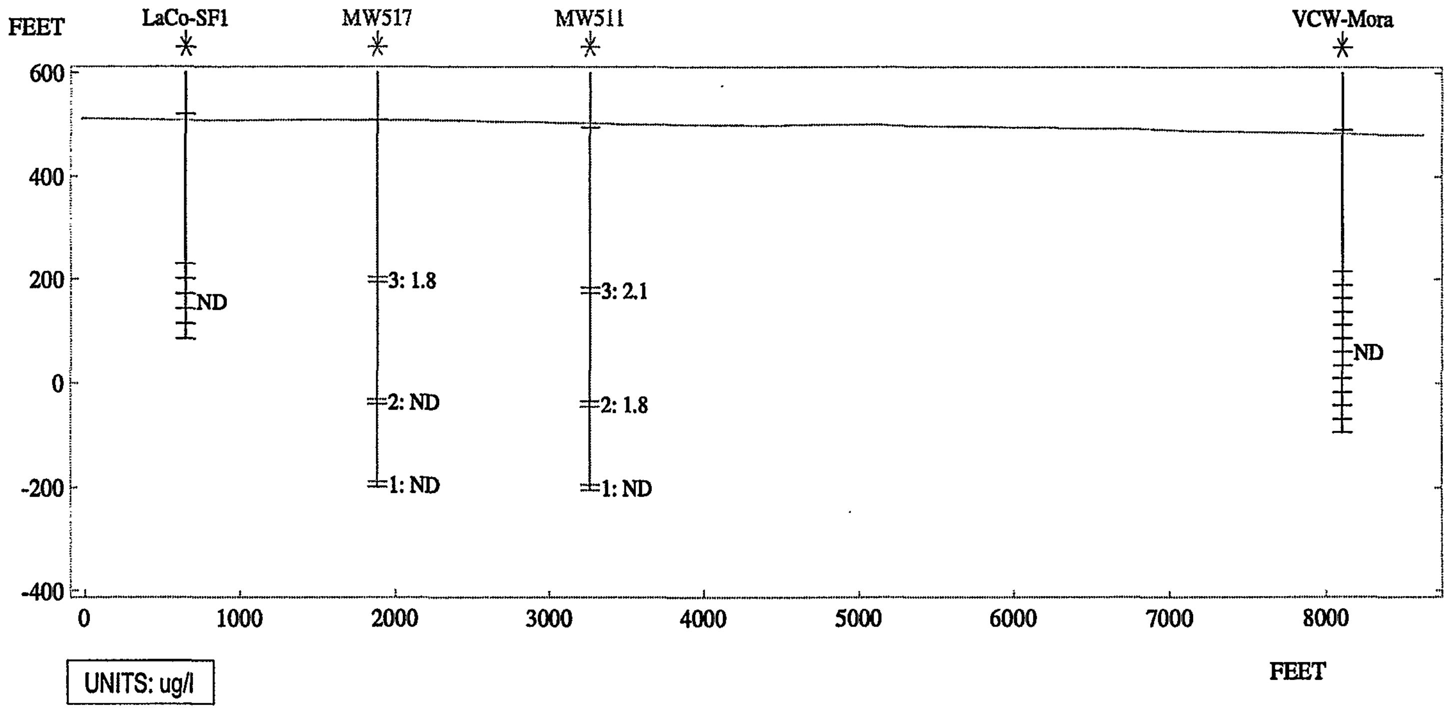



CROSS SECTION CC

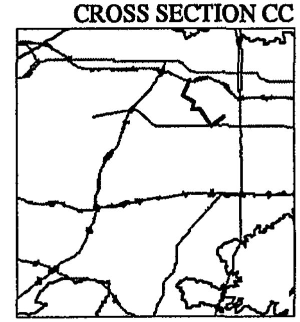
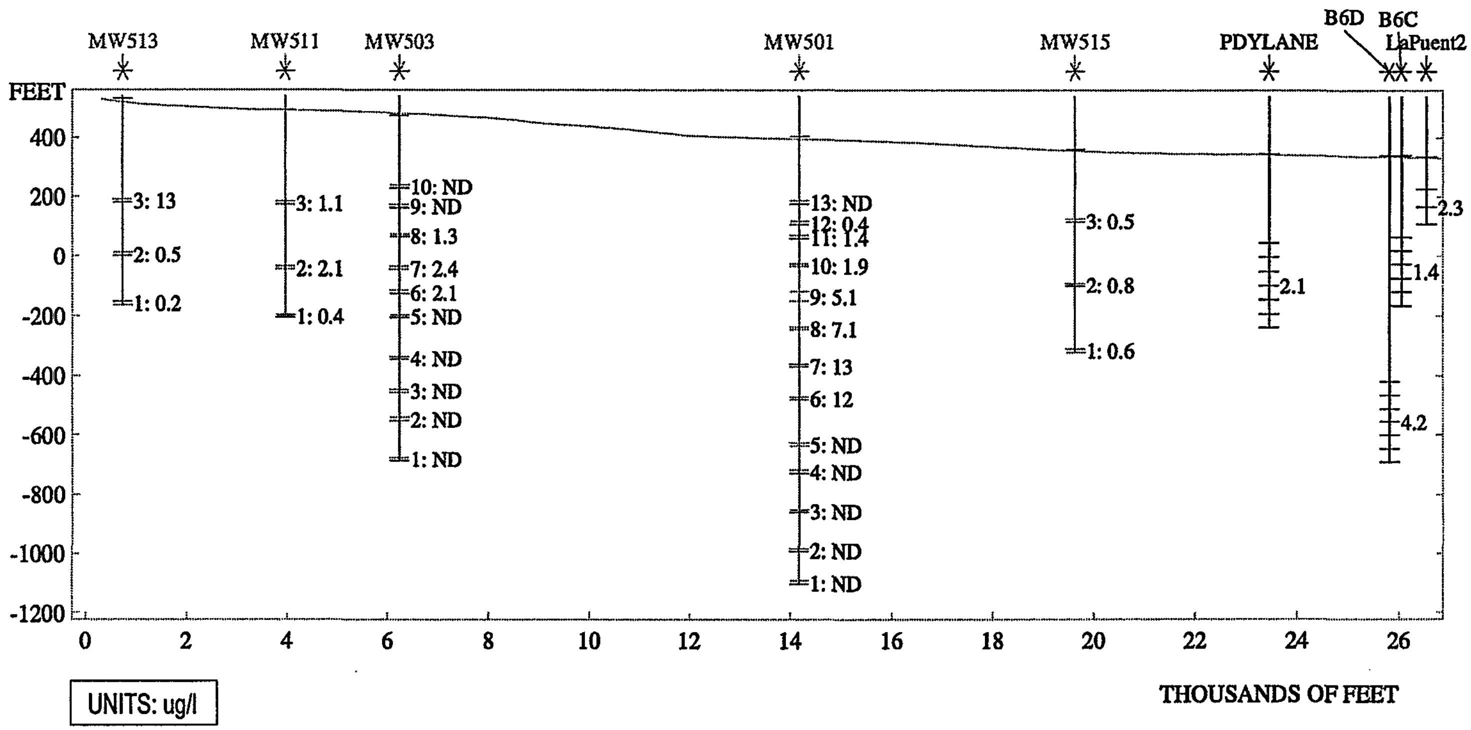


FIGURE 4-14

Cross Section Showing September-October 1996 1,2-DCA Values

Baldwin Park Operable Unit Pre-Remedial Design

CDM environmental engineers, scientists, planners, & management consultants




CROSS SECTION AA

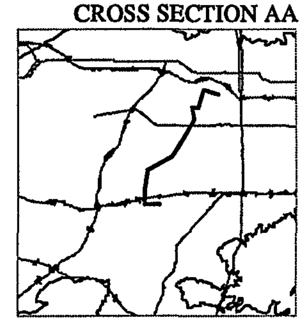


FIGURE 4-15

Cross Section Showing September-October 1996 CCL Values

Baldwin Park Operable Unit Pre-Remedial Design

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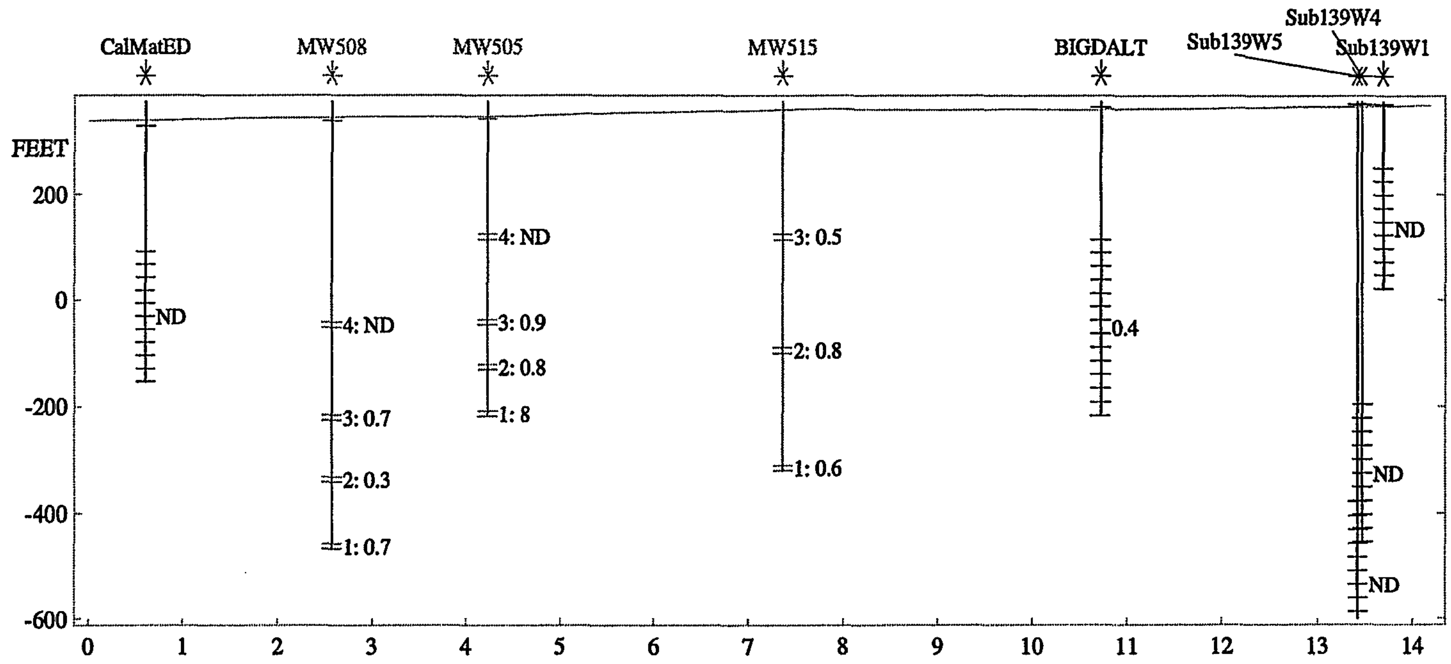
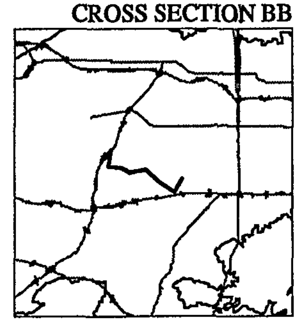


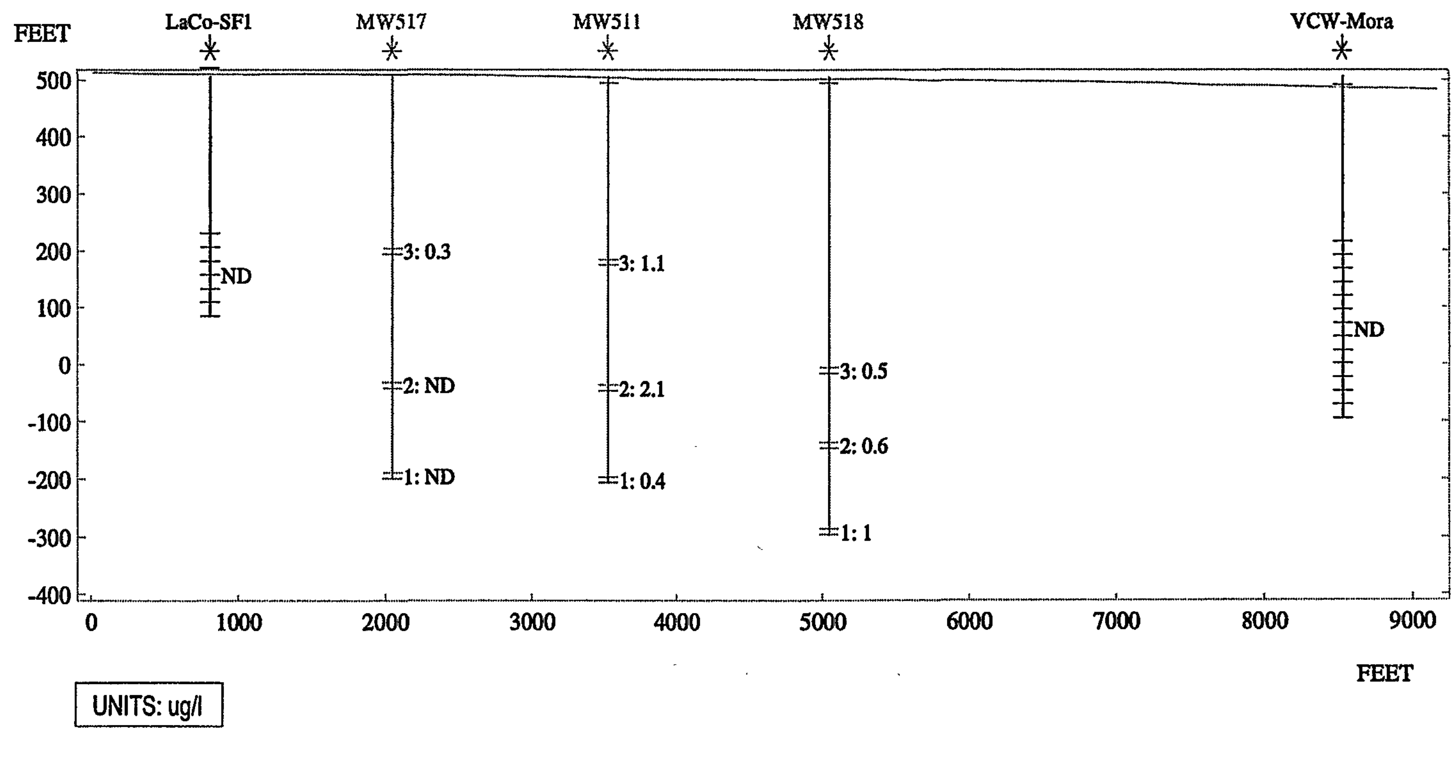

UNITS: ug/l

CROSS SECTION BB

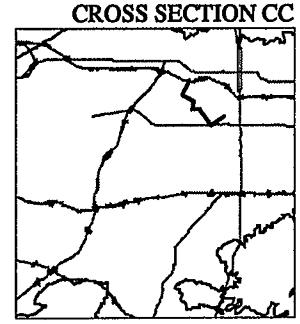


| |
|---|
| ⚹ WELL |
| GROUND SURFACE |
| TOP OF SCREEN |
| BOTTOM OF SCREEN |

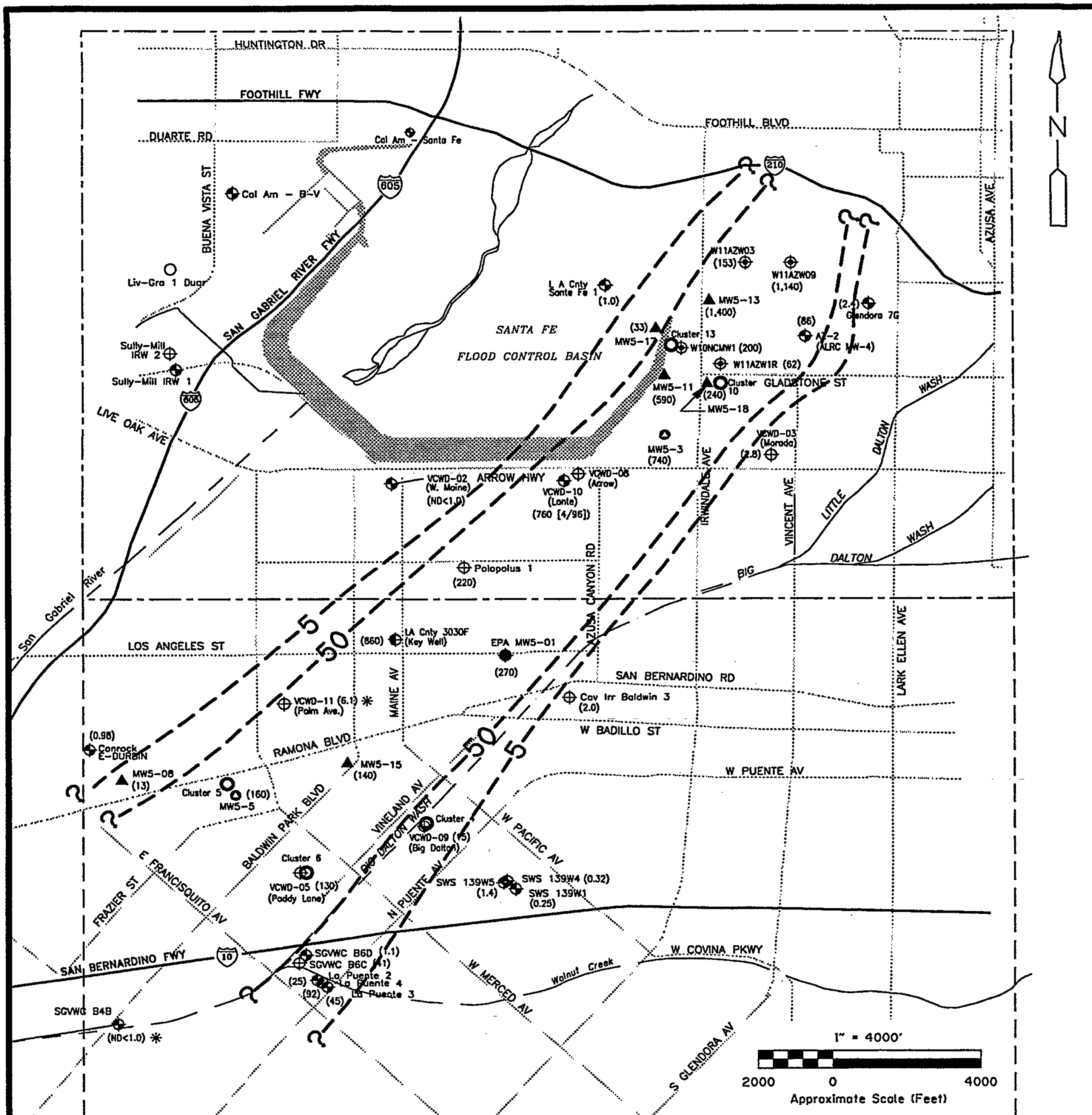
| FIGURE 4-16 | Cross Section Showing September-October 1996 CCL Values<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|




CROSS SECTION CC



| FIGURE 4-17 | Cross Section Showing September-October CCL Values<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|




LEGEND

| | |
|---|---|
| ○ | Multiport (MP) Monitoring Well (Phase 1A) |
| ▲ | MP Monitoring Well (Phase 1B) |
| ● | Existing MP Monitoring Well (EPA) |
| ⊕ | Active Water Supply Well |
| ⊕ | Inactive Water Supply Well |
| ⊕ | Site Assessment Monitoring Well |
| ⊕ | Observation Well |
| ○ | Abandoned Well |
| Cluster 5 ○ | Proposed treatment system extraction well (EPA's ROD, 1994) |
| — - — | Approximate boundary of Upper Baldwin Park Project Area (Subarea 1) |
| — — — | Approximate boundary of Lower Baldwin Park Project Area (Subarea 3) |
| (45) | TCE concentrations (ug/l) from September/October 1996 |
| * | Not contoured due to deeper screen interval |
| — —5— — | TCE contour |

NOTES

1. Posted values for Multiport wells are maximums.
2. Contours are approximate based on available data. Other interpretations are possible.

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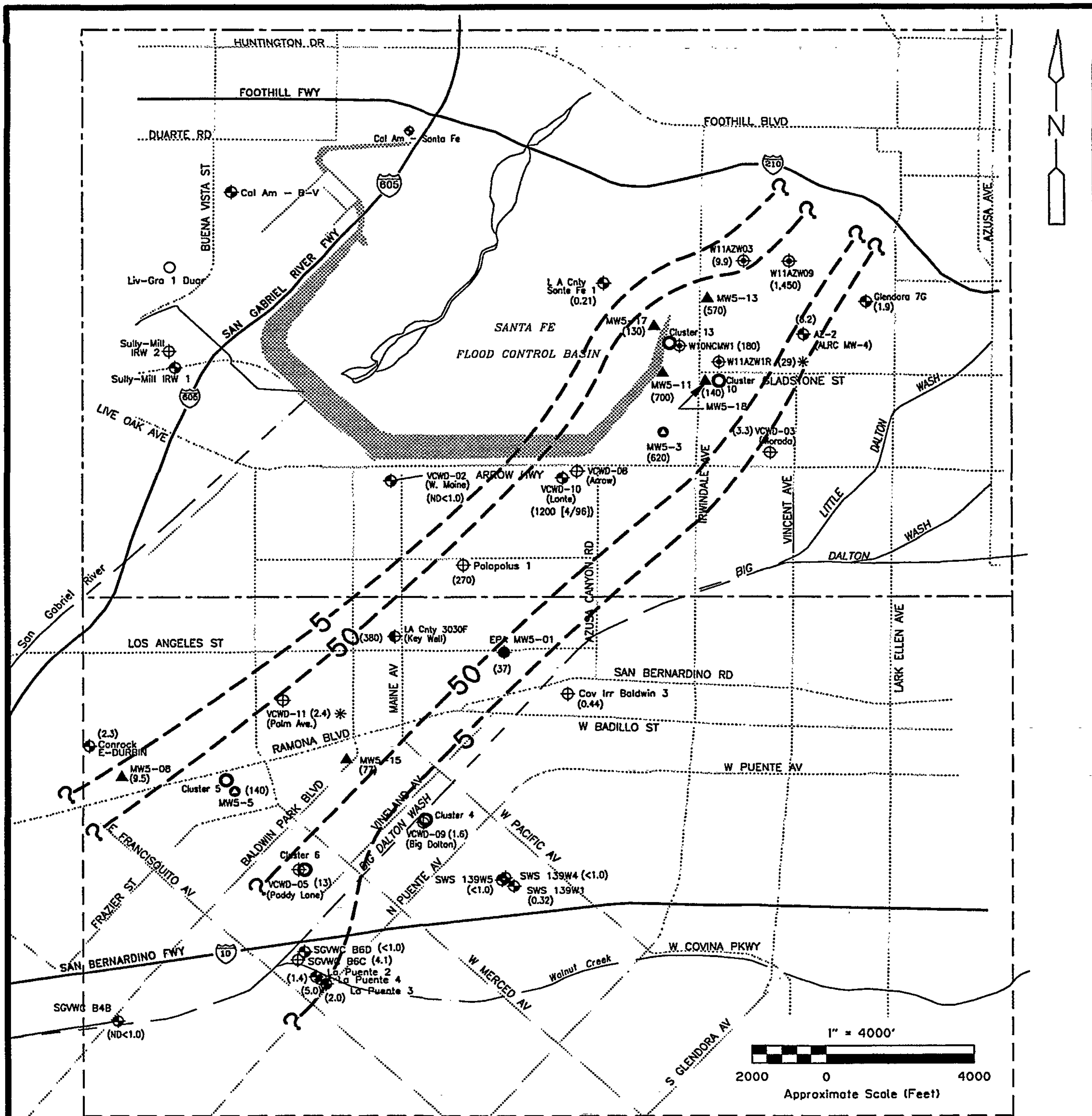
# TCE CONCENTRATION MAP

Figure 4-18




LEGEND

- Multiport (MP) Monitoring Well (Phase 1A)
- MP Monitoring Well (Phase 1B)
- Existing MP Monitoring Well (EPA)
- Active Water Supply Well
- Inactive Water Supply Well
- Site Assessment Monitoring Well
- Observation Well
- Abandoned Well
- Cluster 5 — Proposed treatment system extraction well (EPA's ROD, 1994)
- Approximate boundary of Upper Baldwin Park Project Area (Subarea 1)
- Approximate boundary of Lower Baldwin Park Project Area (Subarea 3)
- (45) — PCE concentrations (ug/l) from September/October 1996
- * — Not contoured due to deeper screen interval
- --5-- — PCE contour

NOTES

1. Posted values for Multiport wells are maximums.
2. Contours are approximate based on available data. Other interpretations are possible.

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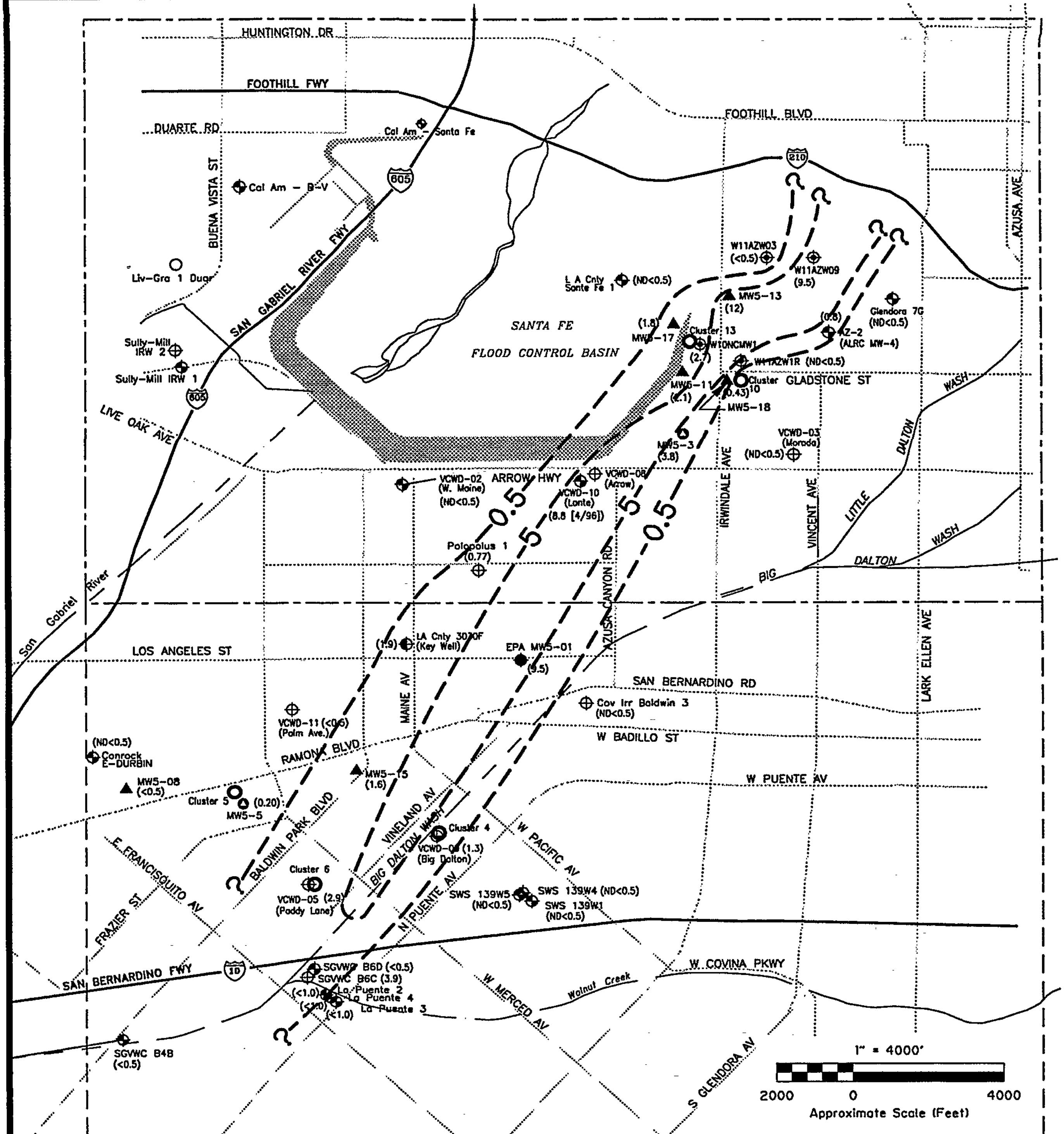
# PCE CONCENTRATION MAP

Figure 4-19




## LEGEND

| | |
|---|---|
| | Multiport (MP) Monitoring Well (Phase IA) |
| ▲ | MP Monitoring Well (Phase IB) |
| ● | Existing MP Monitoring Well (EPA) |
| | Active Water Supply Well |
| | Inactive Water Supply Well |
| | Site Assessment Monitoring Well |
| | Observation Well |
| ○ | Abandoned Well |
| Cluster 5 ○ | Proposed treatment system extraction well (EPA's ROD, 1994) |
| | Approximate boundary of Upper Baldwin Park Project Area (Subarea 1) |
| | Approximate boundary of Lower Baldwin Park Project Area (Subarea 3) |
| (1.3) | 1,2-DCA concentrations (ug/l) from September/October 1996 |
| – –5– – | 1,2-DCA contour |

## NOTES

1. Posted values for Multiport wells are maximums.
2. Contours are approximate based on available data. Other interpretations are possible.

BALDWIN PARK OPERABLE UNIT

# 1,2-DCA CONCENTRATION MAP

Figure 4-20

**CDM**
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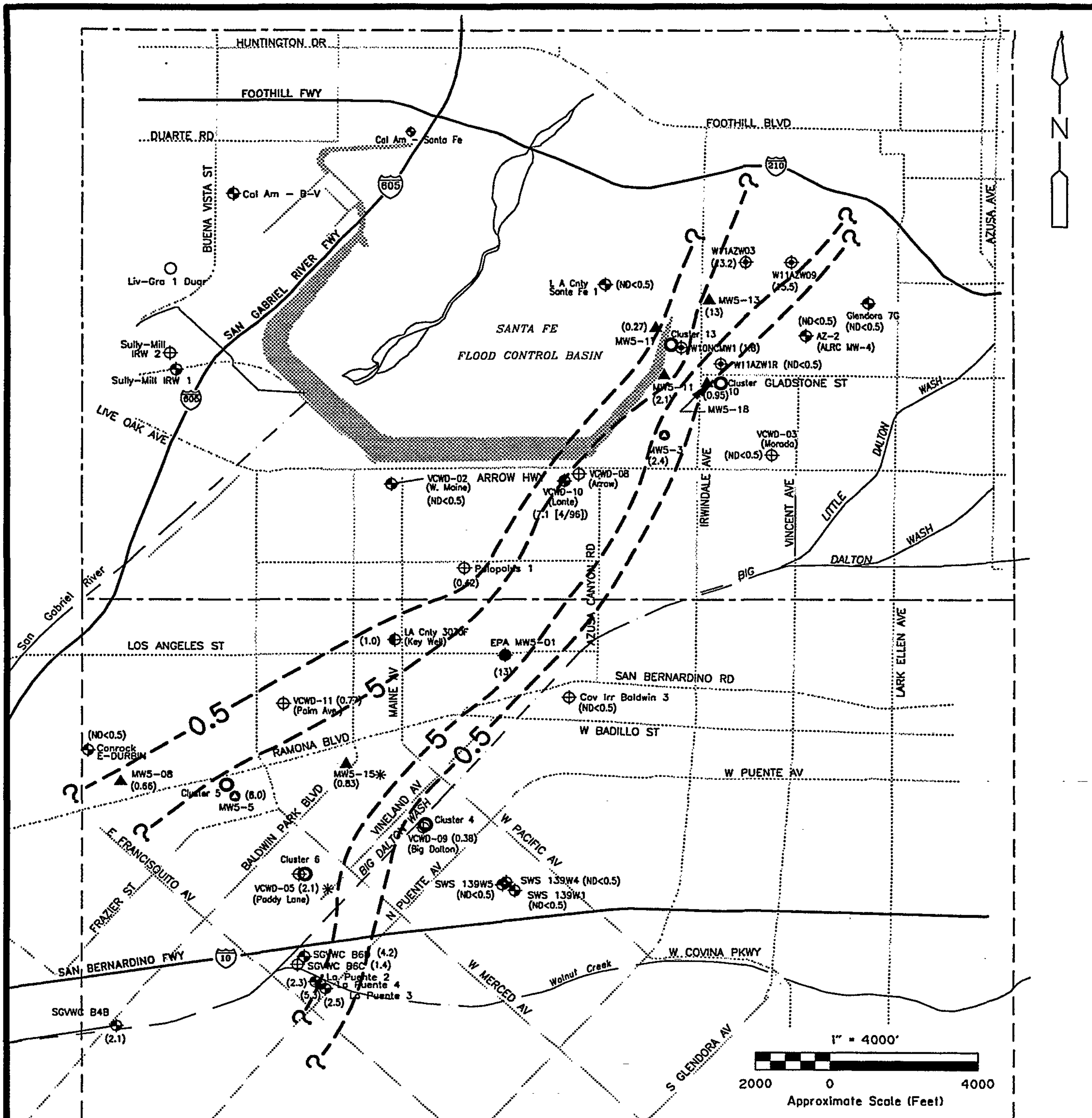
J:\2581-112\CAD\ 4-20_DCA 12/12/96 08:08:53 1:08:31 J. La Madrid




LEGEND

| | | | |
|---|---|---|---|
| ⭘ | Multiport (MP) Monitoring Well (Phase 1A) | Cluster 5 ○ | Proposed treatment system extraction well (EPA's ROD, 1994) |
| ▲ | MP Monitoring Well (Phase 1B) | —— - —— | Approximate boundary of Upper Baldwin Park Project Area (Subarea 1) |
| ◆ | Existing MP Monitoring Well (EPA) | — — — — | Approximate boundary of Lower Baldwin Park Project Area (Subarea 3) |
| ⊕ | Active Water Supply Well | (45) | Carbon Tetrachloride concentrations (ug/l) from September/October 1996 |
| ⊕ | Inactive Water Supply Well | * | Not contoured due to shallow screen interval |
| ⊕ | Site Assessment Monitoring Well | — —5— — | Carbon Tetrachloride contour |
| ⊕ | Observation Well | | |
| ○ | Abandoned Well | | |

NOTES

1. Posted values for Multiport wells are maximums.
2. Contours are approximate based on available data. Other interpretations are possible.

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# CARBON TETRACHLORIDE CONCENTRATION MAP

Figure 4-21

J:\2581-112\CAD\ 4-21_CTC 12/12/96 08:11:45 0:26:00 J. La Madrid

In the northern portion of the OU, the TCE concentrations in the shallower intervals appear to vary the most (i.e., MW5-13, MW5-17).

PCE concentrations are generally lower than TCE concentrations throughout the OU and follow the same vertical and lateral trends as TCE. However, PCE concentrations in MW5-11 and MW5-17 are generally higher than the TCE concentrations.

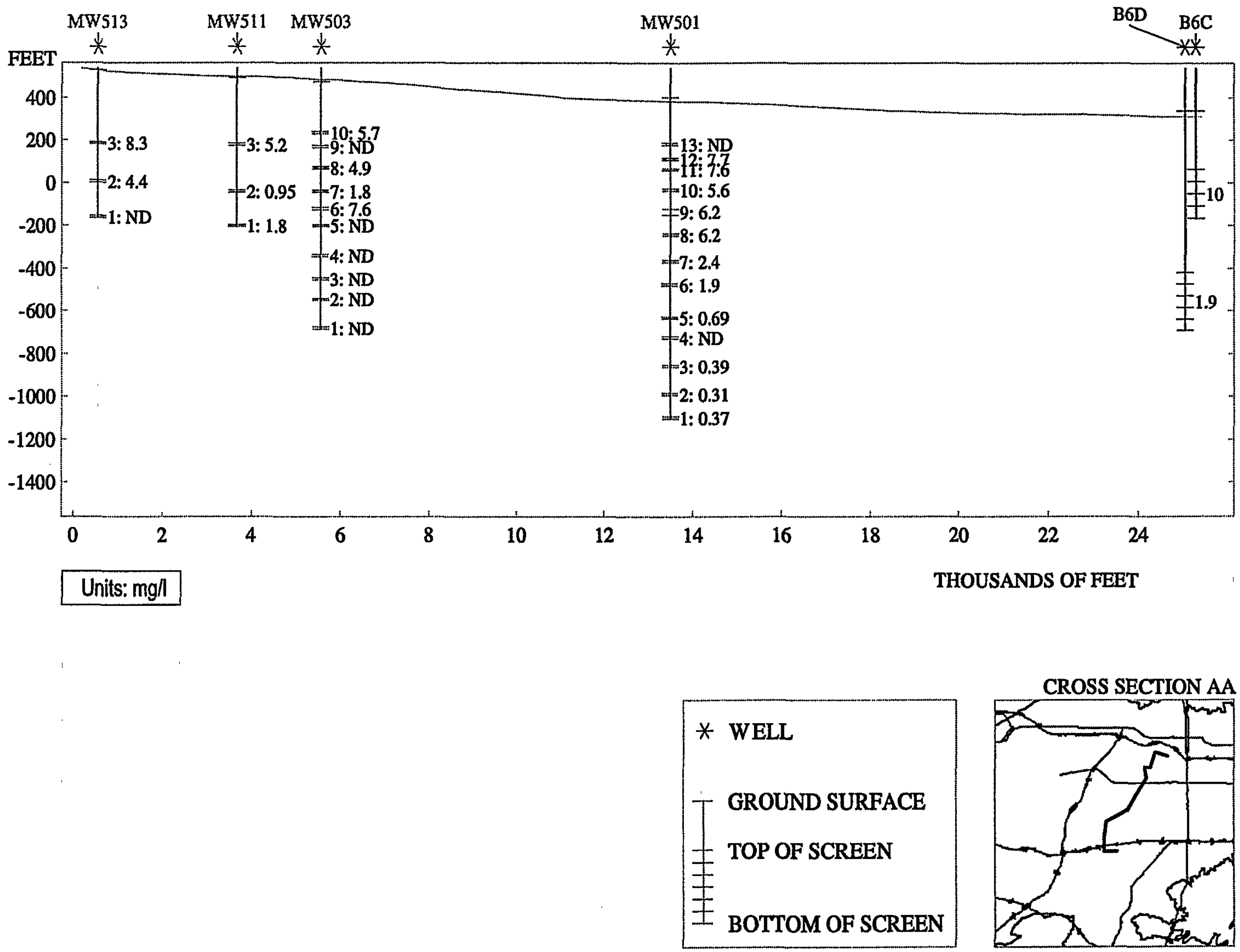
As shown on Figures 4-12 to 4-14, the vertical and spatial trends for 1,2-DCA are generally the same as TCE, however, concentrations are significantly lower (ranging from 12 µg/l in MW5-13 [340-350 feet bgs, 191 feet MSL] to non detect).

CTC was detected generally in the lower intervals of the MP monitoring wells. As shown on cross section AA (Figure 4-15), the extent of the CTC contamination ranges from approximately 520 feet bgs (11 feet MSL) in MW5-13 in the north to approximately 600 feet (-110 feet MSL) in MW5-11 and MW5-03 to a maximum depth of approximately 1000 feet (-600 feet MSL) in MW5-01. CTC was also detected at 4.2 µg/l in Well B6D which is perforated from 760 to 1032 feet.

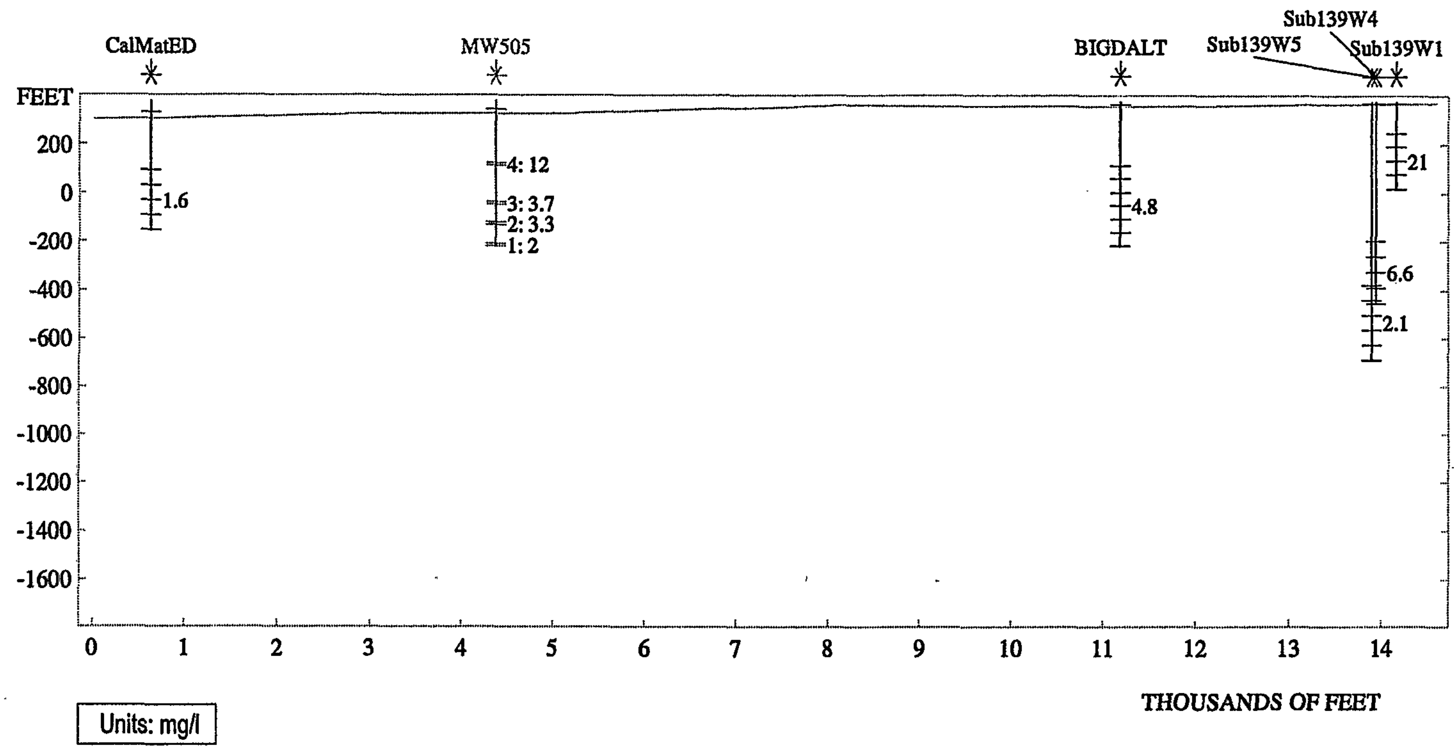
#### *4.1.1.2 Lateral and Vertical Extent of Nitrate Contamination*

As mentioned in Section 3, samples collected from wells located in Subarea 3 were analyzed for nitrates during each round of sampling. Whereas, nitrates were analyzed only during the first quarterly round of sampling for samples collected from wells located in Subarea 1. Nitrates were analyzed using EPA Method 300.0 and reported as nitrogen (as N). The state MCL for nitrate (as N) is 10 mg/l. Analytical results from the nitrate analyses for all wells sampled are tabulated in Table 4-11 and illustrated on Plate 3. In addition, cross sections showing vertical and lateral trends in nitrates in March 1996 are shown on Figures 4-22 and 4-23. Figure 4-22 presents cross section AA, which illustrates nitrate concentrations along a northeast/southwest axis in the BPOU; and cross section BB is provided on Figure 4-23, which illustrates nitrate concentrations in Subarea 3, along an east/west axis.

As shown on Table 4-11, nitrate concentrations in each well showed very little temporal fluctuation. This stability is best demonstrated when reviewing data from wells located in Subarea 3, which were sampled at least three times during the monitoring program. Nitrate concentrations measured during each round of quarterly sampling ranged from non-detectable levels to approximately 20 mg/l. The maximum nitrate concentrations were consistently detected in Suburban Water System's (SWS) well 139W1. The greatest nitrate fluctuations were observed in two water supply wells: Glendora 7G and Valley County Water District's (VCWD) well 3 (Morada). Glendora 7G was sampled in March and September 1996 and exhibited nitrate concentrations of 4.5 and 17.7 mg/l, respectively. In the Morada well, a similar trend was observed when nitrate concentrations increased from 2.2 to 13.7 mg/l between March and September 1996. These increases appear to be inconsistent when compared to the stable nitrate trends observed in other wells in the BPOU. In the shallow portion of the aquifer (i.e, approximately the upper 300 feet), analytical results from the MP wells indicate moderate temporal fluctuations in nitrate concentrations.




| FIGURE 4-22 | Cross Section Showing Average Nitrate (as N) Levels<br>March-April 1996<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>*environmental engineers, scientists, planners, & management consultants* |
|---|---|---|




CROSS SECTION BB

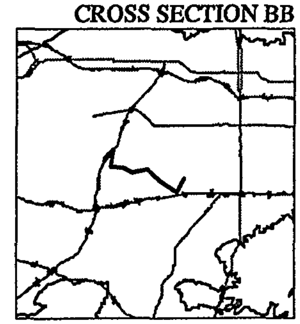


FIGURE 4-23

Cross Section Showing Average Nitrate (as N) Levels
March-April 1996

Baldwin Park Operable Unit Pre-Remedial Design

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Analytical results indicate that the maximum nitrate concentrations are typically observed in the shallowest screened zones, then show a general decrease with depth, which is consistent between rounds of sampling. Although nitrate concentrations generally decrease with depth, the trend is not linear, as shown by data collected from the MP wells.

Trends in the lateral distribution of nitrates are not as apparent. In general, the lateral distribution of elevated nitrate concentrations extends through both the northern and southern sections of the BPOU, with neither area showing a predominant trend. However, analytical results do indicate that the higher nitrate concentrations are typically detected in the eastern portions of both subareas, and then steadily decrease towards the west.

Wells containing nitrates at concentrations that exceed the MCL of 10 mg/l are distributed throughout the OU. During each round of sampling, four wells consistently displayed nitrate concentrations greater than the MCL. Three of the wells are located in Subarea 3, the southern portion of the OU. As mentioned previously, SWS well 139W1 had the highest concentrations and is located in the south central portion of Subarea 3. It should be noted, however, that this well has a very shallow perforated interval (120-349 feet bgs), which typically result in higher concentrations. Other wells in the same well field (i.e., SWS 139W4 and 139W5) that are screened in the deeper zone, do not exhibit nitrate concentrations above the MCL. Other wells in Subarea 3 that have consistently contained elevated nitrates include MP well MW5-05 (zone 4, the uppermost zone), located to the northwest of the SWS well field, and San Gabriel Valley Water Company (SGVWC) well B6C, which is located in the southwestern portion of the OU.

To the northeast, in Subarea 1, the Transit Mix water well AZ-2 (also referred to as ALRC MW-4) has consistently contained nitrate concentrations above the MCL. In addition, the most recent data from September 1996 indicate significant nitrate increases in the Morada and Glendora 7G wells, as discussed previously. Because these increases were significant, historical data were reviewed to determine if the elevated nitrate concentrations were consistent with previous results. Based upon the data review, both wells have historically contained nitrate concentrations that exceed the MCL. Therefore, it appears that the initial nitrate data collected in March 1996 were atypical and not representative of actual conditions.

#### *4.1.1.3 General Mineral Water Quality*

As discussed in Section 3, samples were collected from each well during the first quarterly groundwater sampling event and were analyzed for a comprehensive suite of parameters including general minerals (i.e., calcium, magnesium, potassium, sodium, chloride, sulfate, carbonate, bicarbonate and hardness), metals (i.e., aluminum, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel and zinc), radon, and total dissolved and suspended solids (TDS and TSS, respectively). These data were collected for treatment system design purposes and are tabulated in Tables 4-12 through 4-21. Table 4-22 summarizes these data and presents maximum, minimum and mean concentrations for each of the metal and general mineral constituents, and are organized according to subarea. Laboratory reports are included in Appendix B.

## Table 4-22
Baldwin Park Operable Unit
Summary of Metals & General Mineral Statistics

| Constituent | | SUBAREA 1 Minimum Conc. | Maximum Conc. | Mean Conc.[2] | Total No. of Measurements | No. of Non-Detects | No. Exceeding MCL | SUBAREA 3 Minimum Conc. | Maximum Conc. | Mean Conc.[2] | Total No. of Measurements | No. of Non-Detects | No. Exceeding MCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metals** | **MCL**[1] | | | | | | | | | | | | |
| Aluminum | 1 | <0.0437 | 0.0907 | 0.0366 | 34 | 33 | 0 | <0.0437 | 0.129 | 0.0422 | 38 | 34 | 0 |
| Arsenic | 0.05 | <0.00299 | 0.081 | 0.0047 | 34 | 25 | 1 | <0.00299 | 0.0034 | 0.0023 | 38 | 34 | 0 |
| Barium | 1 | <0.00134 | 1.01 | 0.145 | 34 | 3 | 1 | <0.00134 | 0.212 | 0.113003 | 38 | 7 | 0 |
| Cadmium | 0.005 | <0.0017 | <0.0017 | -- | 34 | 34 | -- | <0.0017 | 0.0028 | 0.001204 | 38 | 37 | 0 |
| Chromium | 0.05 | <0.0018 | 0.06 | 0.007 | 34 | 23 | 1 | <0.0018 | 0.0217 | 0.004499 | 38 | 18 | 0 |
| Copper | 1 [a] | <0.0027 | 0.0777 | 0.013 | 34 | 13 | 0 | <0.0027 | 0.0842 | 0.0096 | 38 | 12 | 0 |
| Iron | 0.30 [a] | <0.0225 | 3.7 | 0.19 | 34 | 8 | 3 | <0.0225 | 0.92 | 0.087 | 38 | 16 | 3 |
| Lead | 0.05 | <0.0006 | 0.012 | 0.002 | 34 | 10 | 0 | <0.0006 | 0.0053 | 0.001 | 38 | 18 | 0 |
| Manganese | 0.05 [a] | <0.002 | 10.2 | 0.32 | 34 | 9 | 5 | <0.002 | 0.03 | 0.005 | 38 | 18 | 0 |
| Mercury | 0.002 | <0.000173 | 0.0015 | 0.00022 | 34 | 32 | 0 | <0.000173 | 0.0011 | 0.00014 | 38 | 33 | 0 |
| Nickel | 0.1 | <0.0047 | 0.04 | 0.009 | 34 | 27 | 0 | <0.0047 | 0.04 | 0.006 | 38 | 35 | 0 |
| Zinc | 5 [a] | <0.0175 | 4.82 | 0.178 | 34 | 13 | 0 | <0.0175 | 0.0743 | 0.0252 | 38 | 13 | 0 |
| **General Minerals** | | | | | | | | | | | | | |
| Calcium | -- | 8.15 | 262 | 72.6 | 34 | 0 | -- | 23.0 | 112 | 57 | 38 | 0 | -- |
| Magnesium | -- | 2.24 | 55.8 | 16.2 | 34 | 0 | -- | 9.46 | 25.5 | 13.3 | 38 | 0 | -- |
| Potassium | -- | 2.66 | 8.20 | 4.58 | 34 | 2 | -- | 2.02 | 5.35 | 3.35 | 38 | 7 | -- |
| Sodium | -- | 9.43 | 148 | 40.7 | 34 | 0 | -- | 9.00 | 41.9 | 18.9 | 38 | 0 | -- |
| Chloride | 250 [a] | 3.2 | 258 | 39 | 34 | 0 | 1 | 7.7 | 50 | 19 | 38 | 7 | 0 |
| Sulfate | 250 [a] | 12 | 76 | 38 | 34 | 0 | 0 | 17 | 58.2 | 31 | 38 | 0 | 0 |
| Nitrate | 10 | 0.1 | 17.7 | 4.62 | 44 | 8 | 5 | 0.05 | 21 | 4.42 | 112 | 9 | 18 |
| Nitrite | 1 | 0.05 | 0.91 | 0.16 | 29 | 27 | 0 | 0.05 | 6.2 | 0.20 | 107 | 101 | 0 |
| Bicarbonate Alk. | -- | 100 | 708 | 240 | 34 | 0 | -- | 88 | 280 | 175 | 38 | 0 | -- |
| Carbonate Alk. | -- | 1 | 39 | 3.1 | 33 | 27 | -- | 1 | 4 | 0.8 | 38 | 38 | -- |
| TDS | 500 [a,b] | 190 | 1280 | 427 | 34 | 0 | 6 | 180 | 600 | 302 | 38 | 0 | 1 |
| TSS | -- | 1 | 15 | 5.0 | 34 | 28 | -- | 10 | 20 | 5.7 | 38 | 36 | -- |
| Hardness (as $CaCO_3$) | -- | 32 | 860 | 244 | 34 | 0 | -- | 100 | 410 | 210 | 38 | 0 | -- |
| **Radon $^{222}$** (pCi/l) | 300 [b,c] | 42 | 395 | 163 | 33 | 0 | 3 | 39 | 280 | 14 | 38 | 0 | 0 |

***Notes:***

**All concentrations are in mg/l unless otherwise indicated.**

[1] California Maximum Contaminant Level (as of 12/95)

[a] Secondary MCL

[b] Federal MCL

[c] Proposed MCL

[2] One-half of the detection limit was used in the mean calculation for a non-detectable concentration.

ND = Not detected at a concentration greater than the limit indicated.

-- = Not calculated or not applicable.

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11/26/96

Metals were typically detected at very low concentrations, if detected at all. However, there were a few instances, as shown on Table 4-22, where the concentrations of some metals exceeded their respective primary or secondary MCLs. The MCL exceedances were more common in the northern portion of the OU, Subarea 1, than in Subarea 3, where the only metal detected at concentrations greater than the MCL was iron. With the exception of barium, there were no apparent trends in the vertical distribution of the metals. Based on data collected from the MP wells, there was a general decreasing trend in barium concentrations with depth.

General mineral analyses indicated that cations (calcium, magnesium, potassium and sodium), chloride, sulfate, alkalinity (bicarbonate and carbonate), TDS and hardness all followed the same general trends in lateral distribution as the metals, where the highest concentrations were detected in Subarea 1. The only exception was with nitrates and nitrites. As discussed in the previous section, the maximum concentrations of nitrates, as well as nitrites, were detected in Subarea 3. Based on data collected from the MP wells, the highest concentrations of most of the general mineral constituents were typically detected in the shallowest zones (i.e., upper 300 feet of the aquifer). In Subarea 1, concentrations of sodium and sulfate appeared to independent of depth; and in Subarea 3, no apparent trends in sodium and potassium concentrations relative to depth were observed.

Analytical results indicated that radon concentrations ranged from 39 to 395 picoCuries per liter (pCi/l). The highest concentrations were detected in Subarea 1; samples collected from three wells in this subarea contained levels that exceed the proposed federal MCL of 300 pCi/l. Radon concentrations did not appear to be dependent upon depth.

#### *4.1.1.4 Field Quality Control Samples*

The following sections present the analytical results from field QC samples that were collected during the groundwater monitoring program. Laboratory reports are included in Appendix B and the analytical results are tabulated in Tables 4-23 through 4-27.

<u>Duplicate Samples</u>

At a minimum, duplicates of groundwater samples were collected at a rate of approximately 10 percent of the samples collected. Duplicate samples were collected, preserved, packaged, labeled, and sealed in a manner identical to the other samples being collected. Duplicates were collected from wells where moderate levels of contamination were anticipated and were analyzed for the same target analytes as the original sample.

Duplicate sample analysis provide a measure of precision, or mutual agreement, among individual measurements of the same property, usually under prescribed similar conditions. Precision of reported results is a function of sample homogeneity, inherent field-related variability, shipping variability, and laboratory analytical variability. Field duplicate samples provide a measure of the contribution to overall variability of field-related and to some extent laboratory-related sources.

**Table 4-23**
Baldwin Park Operable Unit
Summary of Duplicate Sample Analytical Results
VOCs

| Well Identification | Sample Date | Sampler | Sample Type [1] | VOCs [2,3] CTC | Chloro-form | 1,1-DCA | 1,2-DCA | 1,1-DCE | cis-1,2-DCE | PCE | TCE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MW50310 | 4-Aug-95 | CDM | GW | ND<1.1 | 1.4 | 13 | ND<0.23 | 29 | 29 | 22 | 37 |
| MW50310 | 4-Aug-95 | CDM | K | ND<0.64 | 2.2 | 19 | ND<0.14 | 44 | 37 | 30 | 43 |
| | | | RPD | 0 | 44 | 38 | 0 | 41 | 24 | 31 | 15 |
| MW50504 | 16-Aug-95 | CDM | GW | ND<0.64 | ND<0.20 | ND<0.32 | ND<0.14 | ND<0.77 | ND<0.47 | ND<0.41 | ND<0.33 |
| MW50504 | 16-Aug-95 | CDM | K | ND<0.64 | ND<0.20 | ND<0.32 | ND<0.14 | ND<0.77 | ND<0.47 | ND<0.41 | ND<0.33 |
| | | | RPD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MW50310 | 27-Sep-95 | CDM | GW | ND<0.64 | 3.5 | 17 | 0.53 | 39 | 29 | 24 | 43 |
| MW50310 | 27-Sep-95 | CDM | K | ND<0.64 | 2.4 | 10 | 0.44 | 17 | 20 | 12 | 30 |
| | | | RPD | 0 | -37 | -52 | -19 | -79 | -37 | -67 | -36 |
| MW50503 | 12-Oct-95 | CDM | GW | 1.7 | 0.85 | 0.47 | 0.53 | 21 | 15 | 90 | 130 |
| MW50503 | 12-Oct-95 | CDM | K | 1.4 | 0.75 | 0.43 | 0.51 | 18 | 14 | 100 | 150 |
| | | | RPD | -19 | -13 | -9 | -4 | -15 | -7 | 11 | 14 |
| MW51102 | 13-Nov-95 | CDM | GW | ND<0.64 | 3.8 | ND<0.32 | 1.9 | 1.4 | 30 | 580 | 450 |
| MW51102 | 13-Nov-95 | CDM | K | ND<0.64 | 4.2 | ND<0.32 | 2.0 | 2.3 | 34 | 630 | 470 |
| | | | RPD | 0 | 10 | 0 | 5 | 49 | 13 | 8 | 4 |
| MW51302 | 18-Jan-96 | CDM | GW | 0.79 | 1.0 | ND<0.19 | 0.60 | 0.33 | 2.7 | 100 | 110 |
| MW51302 | 18-Jan-96 | CDM | K | 0.74 | 0.88 | ND<0.19 | 0.63 | 0.24 | 2.6 | 93 | 110 |
| | | | RPD | -7 | -13 | 0 | 5 | -32 | -4 | -7 | 0 |
| MW50113 | 13-Mar-96 | CDM | GW | ND<0.46 | 0.68 | 1.0 | ND<0.22 | 0.90 | 6.5 | 7.8 | 15 |
| MW50113 | 13-Mar-96 | CDM | K | ND<0.46 | 0.73 | 1.0 | ND<0.22 | 0.95 | 6.0 | 7.7 | 15 |
| | | | RPD | 0 | 7 | 0 | 0 | 5 | -8 | -1 | 0 |
| W11AZW09 | 13-Mar-96 | GeoSyntec | GW | 0.6 | 1.4 | ND<0.5 | ND<0.5 | 0.5 | 3.0 | 26.2 | 24.1 |
| W11AZW09 | 13-Mar-96 | CDM | K | 0.65 | 1.7 | ND<0.19 | 0.39 | 0.32 | 4.1 | 29 | 24 |
| | | | RPD | 8 | 19 | 0 | -- | -44 | 31 | 10 | 0 |
| MW51103 | 14-Mar-96 | CDM | GW | 1.4 | 2.3 | 1.2 | 1.1 | 16 | 7.8 | 110 | 100 |
| MW51103 | 14-Mar-96 | CDM | K | 1.6 | 2.6 | 1.2 | 1.2 | 18 | 8.6 | 110 | 100 |
| | | | RPD | 13 | 12 | 0 | 9 | 12 | 10 | 0 | 0 |
| MW50310 | 19-Mar-96 | CDM | GW | ND<0.46 | 2.7 | 18 | 0.55 | 29 | 31 | 22 | 41 |
| MW50310 | 19-Mar-96 | CDM | K | ND<0.46 | 3.1 | 19 | 0.58 | 35 | 34 | 24 | 42 |
| | | | RPD | 0 | 14 | 5 | 5 | 19 | 9 | 9 | 2 |
| MW50503 | 20-Mar-96 | CDM | GW | 0.78 | 1.5 | 0.95 | 0.97 | 24 | 21 | 180 | 240 |
| MW50503 | 20-Mar-96 | CDM | K | 0.58 | 1.3 | 0.71 | 0.80 | 18 | 17 | 160 | 200 |
| | | | RPD | -29 | -14 | -29 | -19 | -29 | -21 | -12 | -18 |
| 01900035 | 22-Mar-96 | CDM | GW | 0.86 | 1.9 | 0.86 | 2.0 | 0.41 | 1.9 | 4.3 | 26 |
| 01900035 | 22-Mar-96 | CDM | K | 0.82 | 1.9 | 0.83 | 2.0 | 0.42 | 2.0 | 6.6 | 25 |
| | | | RPD | -5 | 0 | -4 | 0 | 2 | 5 | 42 | -4 |
| W11AZW1R | 13-Jun-96 | GeoSyntec | GW | 4.0 | ND<0.5 | 7.3 | ND<0.5 | 97.1 | 7.6 | 20.7 | 47.3 |
| W11AZW1R | 13-Jun-96 | CDM | K | ND<0.28 | 0.47 | 6.2 | 0.35 | 130 | 6.4 | 20 | 52 |
| | | | RPD | -- | -- | -16 | -- | 29 | -17 | -3 | 9 |
| MW50310 | 18-Jun-96 | CDM | GW | ND<0.28 | 1.8 | 17 | 0.43 | 43 | 38 | 15 | 40 |
| MW50310 | 18-Jun-96 | CDM | K | ND<0.28 | 1.7 | 16 | 0.42 | 33 | 35 | 13 | 35 |
| | | | RPD | 0 | -6 | -6 | -2 | -26 | -8 | -14 | -13 |
| MW50109 | 20-Jun-96 | CDM | GW | 5.3 | 12 | 3.1 | 11 | 1.3 | 10 | 11 | 270 |
| MW50109 | 20-Jun-96 | CDM | K | 5.8 | 13 | 3.6 | 12 | 1.6 | 11 | 13 | 310 |
| | | | RPD | 9 | 8 | 15 | 9 | 21 | 10 | 17 | 14 |
| MW50503 | 21-Jun-96 | CDM | GW | 0.79 | 1.4 | 0.86 | 0.91 | 24 | 20 | 120 | 160 |
| MW50503 | 21-Jun-96 | CDM | K | 0.92 | 1.5 | 0.99 | 0.97 | 26 | 22 | 140 | 180 |
| | | | RPD | 15 | 7 | 14 | 6 | 8 | 10 | 15 | 12 |
| MW51303 | 21-Jun-96 | CDM | GW | 17 | 30 | 1.1 | 18 | 9.2 | 33 | 800 | 1,400 |
| MW51303 | 21-Jun-96 | CDM | K | 16 | 29 | 1.0 | 16 | 8.3 | 31 | 720 | 1,300 |
| | | | RPD | -6 | -3 | -10 | -12 | -10 | -6 | -11 | -7 |
| MW51103 | 24-Jun-96 | CDM | GW | 1.1 | 2.8 | 1.2 | 1.5 | 21 | 8.9 | 97 | 94 |
| MW51103 | 24-Jun-96 | CDM | K | 1.0 | 2.6 | 1.1 | 1.4 | 19 | 8.5 | 86 | 83 |
| | | | RPD | -10 | -7 | -9 | -7 | -10 | -5 | -12 | -12 |
| 01900035 | 26-Jun-96 | CDM | GW | 0.63 | 1.4 | 0.43 | 1.7 | ND<0.21 | 1.1 | 3.9 | 15 |
| 01900035 | 26-Jun-96 | CDM | K | 0.62 | 1.4 | 0.41 | 1.7 | 0.24 | 1.2 | 4.3 | 16 |
| | | | RPD | -2 | 0 | -5 | 0 | -- | 9 | 10 | 6 |

**Table 4-23**
Baldwin Park Operable Unit
Summary of Duplicate Sample Analytical Results
VOCs

| Well Identification | Sample Date | Sampler | Sample Type [1] | VOCs [2,3] CTC | Chloro-form | 1,1-DCA | 1,2-DCA | 1,1-DCE | cis-1,2-DCE | PCE | TCE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MW51503 | 9-Jul-96 | CDM | GW | 0.33 | 1.0 | 0.57 | ND<0.22 | 5.8 | 13 | 17 | 61 |
| MW51503 | 9-Jul-96 | CDM | K | 0.33 | 0.93 | 0.50 | ND<0.22 | 5.2 | 11 | 15 | 60 |
| | | | RPD | 0 | -7 | -13 | 0 | -11 | -17 | -13 | -2 |
| 01900031 | 12-Jul-96 | CDM | GW | 4.0 | 5.7 | 3.2 | 3.8 | 5.2 | 15 | 19 | 130 |
| 01900031 | 12-Jul-96 | CDM | K | 3.9 | 5.8 | 3.2 | 4.0 | 5.5 | 16 | 19 | 120 |
| | | | RPD | -3 | 2 | 0 | 5 | 6 | 6 | 0 | -8 |
| MW51503 | 13-Aug-96 | CDM | GW | 0.23 | 0.76 | 0.47 | ND<0.50 | 3.6 | 9.5 | 14 | 47 |
| MW51503 | 13-Aug-96 | CDM | K | 0.3 | 0.92 | 0.54 | 0.32 | 4.4 | 12 | 17 | 59 |
| | | | RPD | 26 | 19 | 14 | -- | 20 | 23 | 19 | 23 |
| W11AZW1R | 12-Sep-96 | GeoSyntec | GW | 8.0 | ND<0.5 | 7.2 | ND<0.5 | 177 | 8.5 | 16.5 | 70 |
| W11AZW1R | 12-Sep-96 | CDM | K | ND<0.5 | 0.47 | 5.1 | 0.41 | 170 | 5.8 | 29 | 62 |
| | | | RPD | -- | -- | -34 | -- | -4 | -38 | 55 | -12 |
| MW50310 | 17-Sep-96 | CDM | GW | ND<0.50 | 1.6 | 15 | 0.33 | 39 | 28 | 14 | 41 |
| MW50310 | 17-Sep-96 | CDM | K | ND<0.50 | 1.1 | 8.6 | 0.34 | 14 | 18 | 6.4 | 21 |
| | | | RPD | 0 | -37 | -54 | 3 | -94 | -43 | -75 | -65 |
| MW50113 | 19-Sep-96 | CDM | GW | ND<0.50 | 0.32 | 0.44 | ND<1.0 | 0.17 | 2.6 | 2.6 | 7.8 |
| MW50113 | 19-Sep-96 | CDM | K | ND<0.50 | 0.3 | 0.4 | ND<1.0 | 0.19 | 2.4 | 2.8 | 7.9 |
| | | | RPD | 0 | -6 | -10 | 0 | 11 | -8 | 7 | 1 |
| MW51101 | 20-Sep-96 | CDM | GW | 0.39 | ND<1.0 | ND<1.0 | ND<0.50 | ND<1.0 | 0.21 | 8.7 | 26 |
| MW51101 | 20-Sep-96 | CDM | K | 0.44 | 0.1 | ND<1.0 | ND<0.50 | ND<1.0 | ND<1.0 | 9.8 | 28 |
| | | | RPD | 12 | -- | 0 | 0 | 0 | -- | 12 | 7 |
| MW50502 | 23-Sep-96 | CDM | GW | 0.75 | 0.3 | ND<1.0 | ND<0.50 | 5 | 5 | 23 | 51 |
| MW50502 | 23-Sep-96 | CDM | K | 0.97 | 0.38 | ND<1.0 | 0.2 | 6.5 | 6 | 29 | 64 |
| | | | RPD | 26 | 24 | 0 | -- | 26 | 18 | 23 | 23 |
| MW51503 | 23-Sep-96 | CDM | GW | 0.45 | 1.4 | 0.78 | 0.39 | 8.4 | 15 | 26 | 82 |
| MW51503 | 23-Sep-96 | CDM | K | 0.26 | 1.1 | 0.6 | 0.37 | 5.3 | 13 | 18 | 60 |
| | | | RPD | -54 | -24 | -26 | -5 | -45 | -14 | -36 | -31 |
| 08000062 | 11-Oct-96 | CDM | GW | 5.3 | 3.6 | 0.27 | 6.2 | 1.6 | 2.8 | 5.0 | 92 |
| 08000062 | 11-Oct-96 | CDM | K | 5.3 | 3.4 | 0.26 | 6.1 | 1.6 | 2.9 | 5.0 | 90 |
| | | | RPD | 0 | -6 | -4 | -2 | 0 | 4 | 0 | -2 |

***Notes:***

**All VOC concentrations are in µg/l.**

[1] GW = original sample; K = duplicate sample (split); and RPD = relative percent difference.

[2] Not all VOCs are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected by CDM prior to August 1996.
All other samples were analyzed for VOCs using EPA Method 8260.
For samples collected by GeoSyntec (for Azusa Land Reclamation Co.), VOCs were analyzed using EPA 8260.
J = Result is estimated; value lies between the method detection and reporting limits.
ND = Not detected at a concentration greater than the limit indicated.
-- = RPD not calculated.
CTC = Carbon tetrachloride; DCA = dichloroethane; DCE = dichloroethene; PCE = tetrachloroethene; and TCE = trichloroethene

## Table 4-24
## Baldwin Park Operable Unit
## Summary of Duplicate Sample Analytical Results
## Metals & General Minerals

| Well Identification | MW50113 | | | MW51103 | | | MW50310 | | | MW50503 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sampler | CDM | | | CDM | | | CDM | | | CDM | | |
| Sample Date | 13-Mar-96 | | | 14-Mar-96 | | | 19-Mar-96 | | | 20-Mar-96 | | |
| Sample Type [1] | GW | K | RPD | GW | K | RPD | GW | K | RPD | GW | K | RPD |
| **Metals** | | | | | | | | | | | | |
| Aluminum | ND<0.0437 | ND<0.0437 | 0 | ND<0.0437 | ND<0.0437 | 0 | ND<0.0437 | ND<0.0437 | 0 | 0.0587 | ND<0.0437 | — |
| Arsenic | ND<0.00299 | ND<0.00299 | 0 | ND<0.00299 | ND<0.00299 | 0 | ND<0.00299 | ND<0.00299 | 0 | 0.00338 | ND<0.00299 | — |
| Barium | 0.0865 | 0.107 | 21 | 0.161 | 0.165 | 2 | 0.438 | 0.462 | 5 | 0.133 | 0.0894 | -39 |
| Cadmium | ND<0.0017 | ND<0.0017 | 0 | ND<0.0017 | ND<0.0017 | 0 | ND<0.0017 | ND<0.0017 | 0 | ND<0.0017 | ND<0.0017 | 0 |
| Chromium | ND<0.0018 | ND<0.0018 | 0 | 0.00551 | 0.00526 | -5 | 0.00187 | 0.00281 | 40 | ND<0.0018 | 0.00203 | — |
| Copper | 0.00642 | 0.00551 | -15 | 0.00694 | 0.00356 | -64 | 0.00451 | 0.00379 | -17 | ND<0.0027 | ND<0.0027 | 0 |
| Iron | ND<0.0225 | 0.0260 | — | ND<0.0225 | 0.0299 | — | 0.0450 | 0.178 | 119 | 0.106 | 0.0323 | -107 |
| Lead | ND<0.000636 | 0.000740 | — | 0.00108 | ND<0.00636 | — | ND<0.000636 | ND<0.000636 | 0 | ND<0.000636 | ND<0.000636 | 0 |
| Manganese | 0.00250 | 0.00240 | -4 | 0.00270 | 0.00303 | 12 | 0.00698 | 0.0156 | 76 | 0.00619 | 0.00367 | -51 |
| Mercury | ND<0.000173 | ND<0.000173 | 0 | ND<0.000173 | ND<0.000173 | 0 | ND<0.000173 | ND<0.000173 | 0 | ND<0.000173 | ND<0.000173 | 0 |
| Nickel | ND<0.0047 | ND<0.0047 | 0 | 0.00590 | 0.00644 | 9 | 0.00478 | ND<0.0047 | — | ND<0.0047 | ND<0.0047 | 0 |
| Zinc | 0.0196 | 0.0464 | 81 | 0.0312 | 0.0178 | -55 | 0.0249 | 0.0263 | 5 | 0.0298 | 0.0229 | -26 |
| **General Minerals** | | | | | | | | | | | | |
| Calcium | 27.0 | 32.6 | 19 | 75.0 | 76.8 | 2 | 172 | 184 | 7 | 73.3 | 55.1 | -28 |
| Magnesium | 11.6 | 12.6 | 8 | 16.3 | 16.6 | 2 | 36.1 | 38.2 | 6 | 17.8 | 12.3 | -37 |
| Potassium | 5.35 | 5.16 | -4 | 4.06 | 4.08 | 0 | 7.00 | 7.49 | 7 | 4.84 | 3.95 | -20 |
| Sodium | 32.9 | 28.2 | -15 | 19.6 | 19.8 | 1 | 40.6 | 42.9 | 6 | 17.4 | 12.4 | -34 |
| Chloride | 36 | 36 | 0 | 21 | 21 | 0 | 85 | 86 | 1 | 22 | 14 | -44 |
| Nitrate (as N) | ND<0.25 | ND<0.25 | 0 | 5.2 | 5.1 | -2 | 5.7 | 5.7 | 0 | 3.7 | 3.7 | 0 |
| Nitrite (as N) | ND<0.25 | ND<0.25 | 0 | ND<0.25 | ND<0.25 | 0 | ND<0.25 | ND<0.25 | 0 | ND<0.25 | ND<0.25 | 0 |
| Sulfate | 38 | 38 | 0 | 36 | 36 | 0 | 38 | 38 | 0 | 36 | 22 | -48 |
| Bicarbonate Alk. | 110 | 120 | 9 | 240 | 240 | 0 | 530 | 520 | -2 | 190 | 160 | -17 |
| Carbonate Alk. | ND<1.0 | ND<1.0 | 0 | ND<1.0 | ND<1.0 | 0 | ND<1.0 | ND<1.0 | 0 | ND<1.0 | ND<1.0 | 0 |
| TDS | 250 | 260 | 4 | 410 | 410 | 0 | 800 | 790 | -1 | 350 | 250 | -33 |
| TSS | ND<10 | ND<10 | 0 | ND<10 | ND<10 | 0 | ND<10 | ND<10 | 0 | ND<10 | ND<10 | 0 |
| Hardness | 180 | 180 | 0 | 290 | 300 | 3 | 610 | 550 | -10 | 270 | 210 | -25 |
| **Radon $^{222}$ (pCi/l)** | 39 | 57 | 38 | 284 | 312 | 9 | 119 | 141 | 17 | 137 | 278 | 68 |

***Notes:***

**All concentrations are in mg/l unless otherwise indicated.**

[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample

RPD = Relative percent difference
NA = Not analyzed
ND = Not detected at a concentration greater than the limit indicated.

**CDM** Camp Dresser & McKee
2581-112\sprdshts\DUPS1.XLS
11/25/96

Baldwin Park Operable Unit
Summary of Duplicate Sample Analytical Results
Metals & General Minerals

| Well Identification | 01900035 | | | W11AZW1R | | | 01900031 | | | MW51503 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sampler | CDM | | | GeoSyntec | CDM | | CDM | | | CDM | | |
| Sample Date | 22-Mar-96 | | | 13-Jun-96 | 13-Jun-96 | | 12-Jul-96 | | | 23-Sep-96 | | |
| Sample Type [1] | GW | K | RPD | GW | K | RPD | GW | K | RPD | GW | K | RPD |
| **Metals** | | | | | | | | | | | | |
| Aluminum | ND<0.0437 | ND<0.0437 | 0 | ND<0.1 | ND<0.0437 | 0 | ND<0.0437 | 0.0968 | -- | ND<0.020 | ND<0.020 | 0 |
| Arsenic | 0.00321 | ND<0.00299 | -- | 0.0024 | ND<0.00299 | -- | ND<0.00299 | ND<0.00299 | 0 | ND<0.010 | ND<0.010 | 0 |
| Barium | 0.114 | 0.114 | 0 | 0.08 | 0.116 | 37 | 0.130 | 0.131 | 1 | ND<0.20 | ND<0.20 | 0 |
| Cadmium | ND<0.0017 | ND<0.0017 | 0 | ND<0.0003 | ND<0.0017 | 0 | 0.00276 | ND<0.0017 | -- | ND<0.0050 | ND<0.0050 | 0 |
| Chromium | 0.00484 | 0.00462 | -5 | ND<0.03 | 0.00921 | -- | 0.00194 | 0.00442 | 78 | ND<0.010 | ND<0.010 | 0 |
| Copper | ND<0.0027 | ND<0.0027 | 0 | ND<0.05 | 0.0133 | -- | 0.0129 | 0.0139 | 7 | ND<0.025 | ND<0.025 | 0 |
| Iron | 0.920 | 2.07 | 77 | ND<0.1 | 0.0340 | -- | 0.0552 | 0.195 | 112 | ND<0.10 | 0.11 | -- |
| Lead | 0.00323 | 0.00476 | 38 | ND<0.005 | 0.00739 | -- | 0.00279 | 0.00251 | -11 | ND<0.0030 | ND<0.0030 | 0 |
| Manganese | 0.00785 | 0.0160 | 68 | ND<0.01 | 0.00590 | -- | 0.00631 | 0.00445 | -35 | ND<0.015 | ND<0.015 | 0 |
| Mercury | ND<0.000173 | ND<0.000173 | 0 | ND<0.001 | ND<0.000173 | 0 | ND<0.000173 | ND<0.000173 | 0 | ND<0.00020 | ND<0.00020 | 0 |
| Nickel | ND<0.0047 | ND<0.0047 | 0 | ND<0.04 | ND<0.0047 | 0 | 0.00501 | 0.00631 | 23 | ND<0.040 | ND<0.040 | 0 |
| Zinc | 0.0304 | 0.0265 | -14 | 0.21 | 0.262 | 22 | 0.0910 | 0.0699 | -26 | ND<0.020 | 0.024 | -- |
| **General Minerals** | | | | | | | | | | | | |
| Calcium | 59.7 | 60.1 | 1 | 61.2 | 56.6 | -8 | 70.8 | 70.5 | 0 | 67 | 72.9 | 8 |
| Magnesium | 10.4 | 10.4 | 0 | 11.2 | 10.5 | -6 | 13.1 | 13.1 | 0 | 14.9 | 16.3 | 9 |
| Potassium | 3.44 | 3.51 | 2 | 3.7 | 3.35 | -10 | 4.02 | 3.96 | -2 | ND<5.0 | ND<5.0 | 0 |
| Sodium | 16.6 | 16.3 | -2 | 12.2 | 11.9 | -2 | 12.8 | 12.7 | -1 | 14.7 | 15.8 | 7 |
| Chloride | 44 | 45 | 2 | 19 | 20 | 5 | 21 | 21 | 0 | 25.8 | 25.3 | -2 |
| Nitrate (as N) | 4.8 | 4.9 | 2 | 1.2 | NA | -- | 6.7 | 6.7 | 0 | 40.7 | 40.6 | 0 |
| Nitrite (as N) | ND<0.25 | ND<0.25 | 0 | NA | NA | -- | ND<0.25 | ND<0.25 | 0 | ND<0.050 | ND<0.050 | 0 |
| Sulfate | 34 | 34 | 0 | 37 | 38 | 3 | 37 | 37 | 0 | 3 | 3 | 0 |
| Bicarbonate Alk. | 130 | 130 | 0 | 130 | 130 | 0 | 210 | 200 | -5 | 172 | 174 | 1 |
| Carbonate Alk. | ND<1.0 | ND<1.0 | 0 | ND<1.0 | ND<1.0 | 0 | ND<1.0 | ND<1.0 | 0 | ND<4.0 | ND<4.0 | 0 |
| TDS | 280 | 300 | 7 | 258 | 260 | 1 | 340 | 360 | 6 | 318 | 326 | 2 |
| TSS | ND<10 | ND<10 | 0 | 4 | ND<10 | -- | 17 | ND<10 | -- | ND<10.0 | ND<10.0 | 0 |
| Hardness | 210 | 200 | -5 | 260 | 190 | -31 | 250 | 280 | 11 | 228 | 234 | 3 |
| **Radon $^{222}$ (pCi/l)** | 267 | 284 | 6 | NA | 116 | -- | 250 | 278 | 11 | 100 | 160 | 46 |

***Notes:***

**All concentrations are in mg/l unless otherwise indicated.**

[1] Sample Type:
GW = Groundwater sample
K = Duplicate (split) sample

RPD = Relative percent difference
NA = Not analyzed
ND = Not detected at a concentratio greater than the limit indicated.

**CDM** Camp Dresser & McKee
2581-112\sprdshts\DUPS1.XLS
11/25/96

## Table 4-25
Baldwin Park Operable Unit
Summary of Equipment Blank Results - VOCs

| Well Identification | Sample Type [1] | Sample Date | VOCs [2,3] Benzene | n-Butyl-benzene | sec-Butyl-benzene | tert-Butyl-benzene | Chloroform | Chloro-methane | 1,4-Dichloro-benzene | Methylene chloride | Methyl tert-butyl ether | Naphtha-lene | Styrene | Toluene | TCE | o-Xylene | p,m-Xylenes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW50310 | N | 4-Aug-95 | ND<0.20 | ND<0.15 | ND<0.26 | ND<0.24 | ND<0.20 | ND<0.25 | ND<0.27 | **2.9** | NA | **0.56 B** | ND<0.33 | **1.4** | ND<0.33 | ND<0.33 | ND<0.44 |
| MW50504 | N | 16-Aug-95 | ND<0.20 | ND<0.15 | ND<0.26 | ND<0.24 | ND<0.20 | ND<0.25 | ND<0.27 | **3.5** | NA | ND<0.29 | **0.53** | ND<0.22 | ND<0.33 | ND<0.33 | ND<0.44 |
| MW50302 | N | 25-Sep-95 | ND<0.20 | ND<0.15 | ND<0.26 | ND<0.24 | ND<0.20 | ND<0.25 | ND<0.27 | **0.91** | NA | ND<0.29 | ND<0.33 | **0.74** | ND<0.33 | ND<0.33 | ND<0.44 |
| MW50308 | N | 26-Sep-95 | **0.42** | ND<0.15 | ND<0.26 | ND<0.24 | ND<0.20 | ND<0.25 | **0.70** | ND<0.46 | NA | ND<0.29 | ND<0.33 | **2.2** | ND<0.33 | **2.1** | **1.0** |
| MW50310 | N | 27-Sep-95 | **0.23** | ND<0.15 | ND<0.26 | ND<0.24 | ND<0.20 | ND<0.25 | ND<0.27 | **0.73** | NA | ND<0.29 | ND<0.33 | **1.4** | ND<0.33 | ND<0.33 | ND<0.44 |
| MW51103 | N | 10-Oct-95 | ND<0.20 | ND<0.15 | ND<0.26 | ND<0.24 | ND<0.20 | ND<0.25 | ND<0.27 | ND<0.46 | NA | ND<0.29 | ND<0.33 | **0.31** | ND<0.33 | ND<0.33 | **0.74** |
| MW50504 | N | 13-Oct-95 | ND<0.20 | ND<0.15 | ND<0.26 | ND<0.24 | **0.37** | **0.89** | ND<0.27 | **1.5** | NA | ND<0.29 | ND<0.33 | **0.81** | ND<0.33 | ND<0.33 | ND<0.44 |
| MW51703 | N | 30-Oct-95 | ND<0.20 | ND<0.15 | ND<0.26 | ND<0.24 | ND<0.20 | ND<0.37 | ND<0.27 | ND<0.46 | NA | ND<0.29 | ND<0.33 | ND<0.22 | ND<0.33 | ND<0.33 | **0.57** |
| MW51103 | N | 13-Nov-95 | ND<0.20 | **0.19** | ND<0.26 | ND<0.24 | ND<0.20 | ND<0.37 | ND<0.27 | ND<0.46 | NA | ND<0.29 | ND<0.33 | **0.31** | ND<0.33 | ND<0.33 | ND<0.44 |
| MW51703 | N | 30-Nov-95 | ND<0.20 | ND<0.15 | ND<0.26 | ND<0.24 | ND<0.20 | ND<0.37 | ND<0.27 | ND<0.46 | NA | ND<0.29 | ND<0.33 | ND<0.22 | ND<0.33 | ND<0.33 | ND<0.44 |
| MW51303 | N | 18-Jan-96 | ND<0.09 | ND<0.16 | ND<0.11 | ND<0.15 | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | NA | ND<0.37 | 0.23B | ND<0.13 | ND<0.21 | ND<0.13 | ND<0.35 |
| MW51303 | N | 15-Feb-96 | ND<0.09 | ND<0.16 | ND<0.11 | ND<0.15 | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | NA | ND<0.37 | ND<0.13 | ND<0.13 | ND<0.21 | ND<0.13 | ND<0.35 |
| MW50102 | N | 11-Mar-96 | ND<0.09 | ND<0.16 | ND<0.11 | ND<0.15 | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | NA | ND<0.37 | ND<0.13 | ND<0.13 | ND<0.21 | ND<0.13 | ND<0.35 |
| MW50106 | N | 12-Mar-96 | ND<0.09 | ND<0.16 | ND<0.11 | ND<0.15 | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | NA | ND<0.37 | ND<0.13 | **0.18** | ND<0.21 | **0.16** | ND<0.35 |
| MW50113 | N | 13-Mar-96 | ND<0.09 | ND<0.16 | **0.26** | **0.63** | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | NA | ND<0.37 | ND<0.13 | **0.18** | ND<0.21 | ND<0.13 | ND<0.35 |
| MW51103 | N | 14-Mar-96 | ND<0.09 | ND<0.16 | ND<0.11 | ND<0.15 | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | NA | ND<0.37 | ND<0.13 | **0.17** | ND<0.21 | ND<0.13 | ND<0.35 |
| MW51703 | N | 15-Mar-96 | ND<0.09 | ND<0.16 | ND<0.11 | ND<0.15 | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | NA | ND<0.37 | ND<0.13 | **0.15** | ND<0.21 | ND<0.13 | ND<0.35 |
| MW50305 | N | 18-Mar-96 | ND<0.09 | ND<0.16 | ND<0.11 | ND<0.15 | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | NA | ND<0.37 | ND<0.13 | ND<0.13 | ND<0.21 | ND<0.13 | ND<0.35 |
| MW50310 | N | 19-Mar-96 | ND<0.09 | ND<0.16 | ND<0.11 | ND<0.15 | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | NA | ND<0.37 | ND<0.13 | **0.26** | ND<0.21 | ND<0.13 | ND<0.35 |
| MW50504 | N | 20-Mar-96 | ND<0.09 | ND<0.16 | ND<0.11 | ND<0.15 | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | NA | ND<0.37 | ND<0.13 | ND<0.13 | **0.51** | ND<0.13 | ND<0.35 |
| MW51803 | N | 3-Jun-96 | ND<0.09 | ND<0.11 | ND<0.11 | ND<0.15 | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | ND<0.15 | ND<0.37 | ND<0.11 | ND<0.13 | ND<0.22 | ND<0.11 | ND<0.35 |
| MW50303 | N | 17-Jun-96 | ND<0.09 | ND<0.11 | ND<0.11 | ND<0.15 | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | ND<0.15 | ND<0.37 | ND<0.11 | ND<0.13 | ND<0.21 | ND<0.11 | ND<0.35 |
| MW50310 | N | 18-Jun-96 | ND<0.09 | ND<0.11 | ND<0.11 | ND<0.15 | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | ND<0.15 | ND<0.37 | ND<0.11 | ND<0.13 | ND<0.21 | ND<0.11 | ND<0.35 |
| MW50104 | N | 19-Jun-96 | ND<0.09 | ND<0.11 | ND<0.11 | ND<0.15 | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | ND<0.15 | ND<0.37 | ND<0.11 | ND<0.13 | ND<0.21 | ND<0.11 | ND<0.35 |
| MW50109 | N | 20-Jun-96 | ND<0.09 | ND<0.11 | ND<0.11 | ND<0.15 | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | ND<0.15 | ND<0.37 | ND<0.11 | ND<0.13 | ND<0.21 | ND<0.11 | ND<0.35 |
| MW50504 | N | 21-Jun-96 | ND<0.09 | ND<0.11 | ND<0.11 | ND<0.15 | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | ND<0.15 | ND<0.37 | ND<0.11 | ND<0.13 | ND<0.21 | ND<0.11 | ND<0.35 |
| MW51102 | N | 24-Jun-96 | ND<0.09 | ND<0.11 | ND<0.11 | **0.43** | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | ND<0.15 | **1.1** | ND<0.11 | ND<0.13 | ND<0.21 | ND<0.11 | ND<0.35 |
| MW51502 | N | 9-Jul-96 | ND<0.09 | ND<0.11 | ND<0.11 | ND<0.15 | ND<0.24 | ND<0.37 | ND<0.27 | ND<0.29 | ND<0.15 | ND<0.37 | ND<0.11 | **0.15** | ND<0.21 | ND<0.11 | ND<0.35 |
| MW51502 | N | 13-Aug-96 | ND<0.50 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<0.37 | ND<1.0 | ND<2.0 | ND<5.0 | ND<1.0 | ND<1.0 | ND<1.0 | **0.35 J** | ND<1.0 | ND<1.0 |
| MW50304 | N | 16-Sep-96 | ND<0.50 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<2.0 | ND<5.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| MW50310 | N | 17-Sep-96 | ND<0.50 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | **0.22 J** | ND<5.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| MW50104 | N | 18-Sep-96 | ND<0.50 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | **0.35 J** | ND<5.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| MW50111 | N | 19-Sep-96 | ND<0.50 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | **1.4 J** | ND<5.0 | ND<1.0 | ND<1.0 | ND<1.0 | **0.60 J** | ND<1.0 | ND<1.0 |
| MW51102 | N | 20-Sep-96 | **0.12 J** | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | **0.72 J** | ND<5.0 | ND<1.0 | ND<1.0 | ND<1.0 | **0.24 J** | ND<1.0 | ND<1.0 |
| MW51502 | N | 23-Sep-96 | ND<0.50 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | **1.3 J** | ND<5.0 | ND<1.0 | ND<1.0 | ND<1.0 | **0.63 J** | ND<1.0 | ND<1.0 |
| MW50504 | N | 23-Sep-96 | ND<0.50 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<2.0 | ND<5.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| MW50803 | N | 24-Sep-96 | ND<0.50 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | **1.8 J** | **1.0 J** | ND<1.0 | ND<1.0 | ND<1.0 | **0.61 J** | ND<1.0 | ND<1.0 |

***Notes:***

**All VOC concentrations are in μg/l.**

[1] N = Equipment decontamination rinsate blank

[2] Only VOCs with detectable concentrations in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to August 1996.
All other samples were analyzed for VOCs using EPA Method 8260.

J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than the limit indicated.

NA = Not analyzed.

B = Detected in laboratory's method blank.

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## Table 4-26
Baldwin Park Operable Unit
Summary of Field Blank Analytical Results - VOCs

| Well Identification | Well Name | Sample Type [1] | Sample Date | VOCs [2,3] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1,2-Dichloro-ethane | Chloro-form | Methylene chloride | Naphtha-lene | PCE | TCE | Toluene |
| 51902858 | SGVWC B4B | F | 2-Apr-96 | **0.85** | ND<0.24 | **0.97** | ND<0.37 | ND<0.29 | ND<0.21 | ND<0.13 |
| 01902859 | LPVCWD 3 | F | 10-Apr-96 | ND<0.22 | ND<0.24 | **1.0 B** | ND<0.37 | ND<0.29 | ND<0.21 | ND<0.13 |
| 08000060 | VCWD Lante | F | 11-Apr-96 | ND<0.22 | ND<0.24 | **0.74 B** | **0.37** | **0.36** | ND<0.21 | ND<0.13 |
| 08000095 | SWS 139W5 | F | 12-Apr-96 | ND<0.22 | ND<0.24 | **0.55** | ND<0.37 | ND<0.29 | ND<0.21 | ND<0.13 |
| Z1000006 | Key Well | F | 19-Apr-96 | ND<0.22 | ND<0.24 | ND<0.29 | ND<0.37 | ND<0.29 | ND<0.21 | ND<0.13 |
| Z1000006 | Key Well | F | 25-Jun-96 | ND<0.22 | ND<0.24 | ND<0.29 | ND<0.37 | **0.44** | **0.68** | ND<0.13 |
| 08000070 | Santa Fe 1 | F | 27-Jun-96 | ND<0.22 | ND<0.24 | ND<0.29 | ND<0.37 | ND<0.29 | ND<0.21 | ND<0.13 |
| 01900029 | VCWD Morada | F | 1-Jul-96 | ND<0.22 | ND<0.24 | ND<0.29 | ND<0.37 | ND<0.29 | ND<0.21 | **0.18** |
| 01900831 | VCWD Glendora | F | 2-Jul-96 | ND<0.22 | ND<0.24 | ND<0.29 | ND<0.37 | ND<0.29 | ND<0.21 | ND<0.13 |
| 08000039 | VCWD Palm | F | 10-Jul-96 | ND<0.22 | ND<0.24 | ND<0.29 | ND<0.37 | **0.48** | ND<0.21 | ND<0.13 |
| 01900031 | VCWD Paddy Lane | F | 12-Jul-96 | ND<0.22 | ND<0.24 | ND<0.29 | ND<0.37 | ND<0.29 | ND<0.21 | **0.16** |
| Z1000006 | Key Well | F | 25-Sep-96 | ND<0.5 | ND<1.0 | **0.82 J** | ND<1.0 | ND<1.0 | **0.26 J** | ND<1.0 |
| 01900031 | VCWD Paddy Lane | F | 26-Sep-96 | ND<0.5 | **0.054 J** | **0.51 J** | ND<1.0 | ND<1.0 | **0.52 J** | ND<1.0 |
| W10NCMW1 | Norac 1 | F | 27-Sep-96 | ND<0.5 | ND<1.0 | **3.9** | ND<1.0 | ND<1.0 | **1.8** | ND<1.0 |
| 01902169 | Polopolus | F | 1-Oct-96 | ND<0.5 | ND<1.0 | **2.5** | ND<1.0 | ND<1.0 | **1.2** | **0.24 J** |
| 08000095 | SWS 139W5 | F | 7-Oct-96 | ND<0.5 | ND<1.0 | ND<2.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| 78000098 | SGVWC B6D | F | 8-Oct-96 | ND<0.5 | ND<1.0 | ND<2.0 | ND<1.0 | ND<1.0 | ND<1.0 | **0.087 J** |
| 51902858 | SGVWC B4B | F | 9-Oct-96 | ND<0.5 | ND<1.0 | ND<2.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 |
| 01902859 | LPVCWD 3 | F | 11-Oct-96 | ND<0.5 | ND<1.0 | ND<2.0 | ND<1.0 | ND<1.0 | ND<1.0 | **0.079 J** |

***Notes:***

**All VOC concentrations are in μg/l.**

[1] F = Field blank

[2] Only VOCs with detectable concentrations in one or more samples are listed.

[3] VOCs were analyzed using EPA Method 8021 for samples collected prior to August 1996.
All other samples were analyzed for VOCs using EPA Method 8260.

J = Result is estimated; value lies between the method detection and reporting limits.

ND = Not detected at a concentration greater than the limit indicated.

B = Detected in laboratory's method blank.

Table 4-27
Baldwin Park Operable Unit
Quality Assurance Samples
Performance Evaluation Standard

| | | PE Standard Oct-95 | | MW51703P 30-Oct-95 | PE Standard Apr-96 | | 08000095P 12-Apr-96 | PE Standard 26-Sep-96 | | 01900030 26-Sep-96 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Certified Value | Advisory Range | Analytical Results | Certified Value | Advisory Range | Analytical Results | Certified Value | Advisory Range | Analytical Results |
| **VOCs (μg/l)** | **Method** | | | | | | | | | |
| Carbon tetrachloride | # | -- | -- | ND<0.64 | 211 | 154 - 266 | 210 | 4.22 | 3.08-5.32 | **3.0** |
| Chloroform | # | -- | -- | ND<0.20 | -- | -- | **2.9** | -- | -- | ND<1.0 |
| 1,2-Dichloroethane | # | -- | -- | ND<0.14 | 169 | 130 - 211 | 190 | 3.38 | 2.60-4.22 | 2.8 |
| 1,1-Dichloroethene | # | 15.5 | 10.2 - 19.4 | 11 | -- | -- | ND<0.21 | -- | -- | ND<1.0 |
| cis-1,2-Dichloroethene | # | 3.99 | 2.45 - 5.47 | 3.3 | 225 | 138 - 308 | 250 | 4.50 | 2.76-6.16 | 4.8 |
| trans-1,2-Dichloroethene | # | -- | -- | ND<0.49 | -- | -- | **0.73** | -- | -- | ND<1.0 |
| Methylene chloride | # | -- | -- | ND<0.46 | -- | -- | **0.43** | -- | -- | **0.19J** |
| Tetrachloroethene | # | 100 | 73.6 - 122 | **65** | 186 | 137 - 227 | 180 | 3.72 | 2.74-4.54 | 3.0 |
| 1,1,1-Trichloroethane | # | 3.14 | 2.22 - 3.77 | 2.4 | -- | -- | ND<0.26 | -- | -- | ND<1.0 |
| Trichloroethene | # | 20.1 | 15.0 - 24.3 | **13** | 131 | 97.5 - 159 | 130 | 2.62 | 1.95-3.18 | 2.3 |
| Trichlorofluoromethane | # | 3.05 | * | 2.4 | -- | -- | ND<0.32 | -- | -- | ND<1.0 |
| **Metals (mg/l)** | | | | | | | | | | |
| Aluminum | 6010 | -- | -- | NA | 0.229 | 0.188 - 0.270 | **ND<0.0437** | -- | -- | NA |
| Arsenic | 7060 | -- | -- | NA | 0.0765 | 0.0574 - 0.0903 | 0.0801 | -- | -- | NA |
| Barium | 6010 | -- | -- | NA | 0.388 | 0.318 - 0.458 | 0.361 | -- | -- | NA |
| Cadmium | 6010 | -- | -- | NA | 0.0959 | 0.0786 - 0.113 | 0.0874 | -- | -- | NA |
| Chromium | 6010 | -- | -- | NA | 0.241 | 0.198 - 0.284 | **0.334** | -- | -- | NA |
| Copper | 6010 | -- | -- | NA | 0.118 | 0.0968 - 0.139 | 0.110 | -- | -- | NA |
| Iron | 6010 | -- | -- | NA | 0.471 | 0.386 - 0.556 | 0.463 | -- | -- | NA |
| Lead | 7421 | -- | -- | NA | 0.132 | 0.108 - 0.156 | 0.134 | -- | -- | NA |
| Manganese | 6010 | -- | -- | NA | 0.188 | 0.154 - 0.222 | 0.185 | -- | -- | NA |
| Mercury | 7470 | -- | -- | NA | 0.0106 | 0.00795 - 0.0133 | 0.0105 | -- | -- | NA |
| Nickel | 6010 | -- | -- | NA | 0.406 | 0.333 - 0.479 | 0.392 | -- | -- | NA |
| Zinc | 6010 | -- | -- | NA | 0.221 | 0.181 - 0.261 | 0.206 | -- | -- | NA |
| **General Minerals (mg/l)** | | | | | | | | | | |
| Calcium | 6010 | -- | -- | NA | 60.6 | 52.1 - 69.1 | 53.8 | -- | -- | NA |
| Magnesium | 6010 | -- | -- | NA | 30.8 | 26.5 - 35.1 | 28.9 | -- | -- | NA |
| Potassium | 6010 | -- | -- | NA | 123 | 105 - 141 | 107 | -- | -- | NA |
| Sodium | 6010 | -- | -- | NA | 173 | 147 - 199 | 152 | -- | -- | NA |
| Chloride | 300.0 | -- | -- | NA | 138 | 128 - 148 | 140 | -- | -- | NA |
| Nitrate (as N) | 300.0 | -- | -- | NA | -- | -- | ND<0.25 | -- | -- | NA |
| Nitrite (as N) | 300.0 | -- | -- | NA | -- | -- | ND<0.25 | -- | -- | NA |
| Sulfate | 300.0 | -- | -- | NA | 124 | 107 - 141 | **94** | -- | -- | NA |
| Bicarbonate Alk. | 310.1 | -- | -- | NA | 180 | 160 - 200 | 190 | -- | -- | NA |
| Carbonate Alk. | 310.1 | -- | -- | NA | -- | -- | ND<1.0 | -- | -- | NA |
| TDS | 160.1 | -- | -- | NA | 913 | 794 - 1030 | 890 | -- | -- | NA |
| TSS | 160.2 | -- | -- | NA | 109 | 92.7 - 125 | **ND<10** | -- | -- | NA |
| Hardness | 130.2 | -- | -- | NA | 278 | 239 - 317 | **12** | -- | -- | NA |

***Notes:***
* = Advisory range not currently available
-- = Constituent not added to performance evaluation sample.
# For PE samples submitted prior to September 1996, VOCs were analyzed by Thermo Analytical using EPA Method 8021;
For the PE sample submitted in September 1996, VOCs were analyzed by Quanterra Environmental Services using EPA Method 8260..
Results shown in bold type are not within advisory range.
ND = Not detected at a concentration greater than the limit indicated.
NA = Not analyzed

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Precision is best expressed in terms of the standard deviation around the mean or relative percent difference (RPD) between two samples. The RPD between duplicate sample results is calculated using the following equation:

$$RPD = (D_1 - D_2)/[(D_1 + D_2)/2] \times 100$$

where:

RPD=Relative Percent Difference
$D_1$=First sample value
$D_2$=Second sample value (duplicate)

Analytical results for the duplicate samples are shown next to the original sample results, which were presented previously in Tables 4-1 through 4-21. In addition, duplicate and original sample results for several of the target VOCs are summarized in Table 4-23, and duplicate sample results for the metals and general mineral analyses are tabulated in Table 4-24. Also shown on these tables, are the RPDs between the original and duplicate samples.
As indicated in Table 4-23, original and duplicate sample results, in general, agree very well with each other. The RPD values demonstrate this agreement and are typically less than 20 percent. There are some sample results, however, where the RPD values are greater than 20 percent. Although the RPD values were elevated in these instances, the original and duplicate results were within the same order of magnitude, which indicates reasonable agreement between the results, and the differences were most likely the result of variability between samples due to field-related and/or laboratory-related sources.

Duplicate analytical results from the metals and general minerals analyses are presented in Table 4-24. In general, the RPD values for the general mineral analyses were very low, indicating that the reproducibility between the original and duplicate samples was within acceptable limits. Conversely, several of the RPDs for some of the metals exceeded the acceptable limit of 20 percent. In particular, the RPD between the original and duplicate samples for iron, manganese and zinc analyses were high. Based upon a review of the laboratory quality control results (i.e, matrix spike, matrix spike duplicates and laboratory control samples), which were within acceptable limits, the higher RPD values do not appear to be the result of matrix interferences. Because the majority of the copper, iron and manganese sample results were very low (i.e., less than five times the detection limits), which causes the RPD values to be amplified, the higher RPD values were not considered to be significant.

<u>Equipment Decontamination Rinsate Blanks</u>

Decontamination rinsate blanks were obtained from the final rinse water after decontamination of equipment and were prepared in the field by pouring the rinse water through the sampling equipment and into the appropriate sample containers. Decontamination rinsate blanks were collected each day that samples were collected from MP wells and, with the exception of radon, were analyzed for all target analytes submitted for analysis on that day. When possible, equipment blanks were collected following sampling of zones with moderate contamination to determine the effectiveness of the decontamination process.

Analytical results from the equipment blank samples are presented in Tables 4-1 through 4-21. In addition, equipment blank results for VOCs are summarized in Table 4-25. As shown in Table 4-25, the majority of VOC detections are from volatile aromatic hydrocarbons (e.g., benzene, toluene, xylenes, etc.), which are most likely the result of using a gasoline generator on-site during sampling. Several chlorinated VOCs were also detected in the equipment blanks; however, very infrequently and generally at trace concentrations. The most frequently detected chlorinated VOC was methylene chloride, which is a common laboratory contaminant. Therefore, the detection of methylene chloride was not considered significant. TCE was also detected in several of the equipment blanks. Upon comparison of environmental sample results to equipment blank results, it was determined that all environmental samples that were collected after the equipment blanks with detected TCE, also contained TCE. However, the TCE concentrations in the environmental samples were greater than five times the concentrations detected in the respective equipment blanks. Therefore, the TCE detections in the equipment blanks are considered insignificant and do not adversely affect the environmental data.

Field Blanks

Field blanks consisted of organic-free water, and were prepared by pouring in the field, the appropriate volume of water from a contaminant-free container into the sample container without contacting sampling equipment. Field blanks served as a measure of sample contamination resulting from ambient field/site conditions, such as fugitive dust or vapors, and were collected during water supply and site assessment well sampling. Field blanks were submitted to the laboratory for VOC analyses. Laboratory results from field blank analyses are summarized in Table 4-26.

As shown in Table 4-26, the most frequently detected contaminant in the field blank samples was methylene chloride. Upon review of environmental sample results that were collected at the same time as the field blanks, methylene chloride was also detected in each of the samples; however, at concentrations less than five times the field blank concentrations. Because methylene chloride is a common laboratory contaminant, the detections of this compound were most likely the result of laboratory activities and were therefore not considered significant.

The next most frequently detected contaminant in the field blanks was toluene. As with methylene chloride, the detectable concentrations of toluene in the environmental samples were less than five times the field blank concentrations. Therefore, the toluene detections in the environmental samples were most likely the result of field-related and/or laboratory-related activities and were qualified as non-detectable concentrations.

Low levels of two target compounds, TCE and PCE, were detected in several of the field blanks. Upon review of environmental sample results that were collected at the same time as the field blanks, TCE and PCE were also detected in each of the samples, at concentrations greater than five times the field blank concentrations. Therefore, the field blank concentrations were considered insignificant when compared to the concentrations detected in the samples.

In addition, naphthalene, 1,2-DCA and chloroform were each detected once in the field blank results. Neither 1,2-DCA nor naphthalene were detected in the corresponding environmental samples. Therefore, the detection of these two compounds did not affect the environmental sample results. Chloroform was detected in the environmental sample at a concentration greater than five times the concentration detected in the field blank. The detection of chloroform in the field blank was negligible compared to the concentration detected in the environmental sample.

<u>Performance Evaluation (PE) Samples</u>

A total of three performance evaluation check samples were submitted blind to the laboratory as a way to measure analytical performance and analytical method bias (accuracy). Each PE standard was certified to contain five or six VOCs. The second PE sample was also prepared and analyzed for general minerals and metals. The first two PE samples were submitted to Thermo Analytical, of Santa Ana, California, for analysis; the third PE sample was analyzed by Quanterra Analytical Services, of Santa Ana, California. Analytical results from the PE samples are summarized in Table 4-27.

As shown in the table, the first PE sample was submitted in October 1995, at the beginning of the field activities, and contained six VOCs. Analytical results indicated that four of the VOCs, 1,1-DCE, cis-1,2-DCE, 1,1,1-trichloroethane (1,1,1-TCA) and trichlorotrifluoromethane, were within the acceptable advisory ranges. However, TCE and PCE were detected at concentrations outside of the acceptable advisory ranges. The laboratory reported both compounds at concentrations that were 65 percent of the certified concentration, which is slightly lower than the acceptable advisory limit of approximately 75 percent for these compounds.

The second PE sample was submitted in April 1996 and contained five VOCs that had been frequently detected in earlier environmental samples. These five compounds included CTC, 1,2-DCA, cis-1,2-DCE, TCE and PCE. Analytical results indicated that each compound was detected at a concentration that was within the acceptable advisory range. However, three compounds (chloroform, trans-1,2-DCE and methylene chloride) not included in the PE standard were also detected in the sample. Analytical results from other samples submitted with the PE standard on the same day did not contain chloroform or trans-1,2-DCE. Therefore, it does not appear that the laboratory reported false positive detections for these two compounds. Methylene chloride was detected in the laboratory's method blank and was reported as such.

In general, the laboratory performed relatively well with the metals and general minerals analyses. Analytical results for the metals analyses indicated that, with the exception of aluminum and chromium, all metals in the PE standard were reported at concentrations within the advisory ranges. The laboratory reported a non-detectable concentration (less than 0.0437 mg/l) for aluminum, which was lower than the certified concentration of 0.229 mg/l; and chromium was reported at a concentration of 0.334 mg/l, which exceeded the upper advisory limit of 0.284 mg/l. With the exception of sulfate, TSS and hardness, all general minerals were reported at concentrations within the advisory ranges. Each of these three constituents were reported at concentrations lower than the acceptable limits.

The third PE sample was analyzed for the same VOCs as the second PE sample; however, the standard was prepared to contain the five compounds at significantly lower concentrations (i.e., approximately 5 µg/l). Analytical results indicated that four of the VOCs (i.e., 1,1-DCE, cis-1,2-DCE, 1,1,1-TCA and trichlorotrifluoromethane) were within the acceptable advisory ranges. CTC was detected at a concentration of 3.0 µg/l, which was slightly less than the acceptable lower limit of 3.08 µg/l. The certified value was 4.22 µg/l. A trace concentration of methylene chloride was also detected in the PE sample, which was most likely the result of laboratory activities.

### *4.1.2 Groundwater Elevations*

As discussed previously in Section 3.1.1.5, the elevations of the MP monitoring wells were surveyed after the wells were installed. The survey results are compiled in Table 4-28. Groundwater elevations for the newly-installed MP monitoring wells and Network wells are compiled in Table 4-29. Groundwater contours for quarterly measurements for MP monitoring wells and Network wells during the March/April, June/July and September/October sampling periods are illustrated in Figures 4-24 through 4-26, respectively. The water supply wells are generally perforated from 300 to 500 feet bgs. Therefore, because the water levels in the different ports in the MP monitoring wells differ somewhat, only one port was used to designate the water level for each multiport well in generating the contour maps. This port generally corresponded to the nearby water supply well perforation interval.

As indicated by the figures, the groundwater flow direction in the Baldwin Park area during the six-month period was generally towards the west-southwest in the northern portion of the OU and to the southwest in the central to southern portion of the OU based on the available data. Based on this six month period, the data indicate little seasonal variation in groundwater flow.

Evaluation of the most recent groundwater elevation data (i.e. September/October, Figure 4-25) indicates that the horizontal hydraulic gradient generally ranged from 8 feet per mile in the northern portion of the OU to approximately 5 feet per mile in the southern portion of the OU, and was generally oriented southwest.

Cross sections with water elevations for each well are shown on Figures 4-27 through 4-35 for three quarters (March/April, June/July, and September/October). Generally the vertical gradients were minimal, however, there appears to be a slight downward gradient in most of the MP monitoring wells. During the March/April monitoring period the difference in water levels between the upper and lower screened intervals (ports) varied from 0.3 feet in MW5-17 to 3.1 feet in MW5-05. The head differences during the June/July monitoring period varied from 0 feet in MW5-17 to 2.6 feet in MW5-05. The September/October head differences varied from 0 feet in MW5-18 to 1.6 feet in MW5-05. These trends are also shown on the hydrographs of the MP monitoring wells and Network wells (Figures 4-36 through 4-40).

**Table 4-28**
Baldwin Park Operable Unit
Summary of Well Survey Data

| Multiport (MP) Well No. | 4-inch Steel Casing Total Depth (ft bgs) | Surveyed Horizontal Coordinates (Calif. Coordinate NAD 27) | | Surveyed Horizontal Coordinates (UTM NAD 83) | | Surveyed Elevation (feet MSL) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Northing (feet) | Easting (feet) | Northing (meters) | Easting (meters) | Top of MP PVC Casing | Top of 4-inch Steel Casing | Well Cover | Ground Surface |
| MW5-03 | 1185 | 4152488.94 | 4306731.94 | 3774695.70 | 413516.73 | 473.83 | NM | 474.41 | 474.41 |
| MW5-05 | 587 | 4142317.46 | 4295160.11 | 3771642.65 | 409950.45 | 342.18 | NM | 342.52 | 342.52 |
| MW5-08 | 725 | 4143055.70 | 4293724.69 | 3771873.29 | 409516.03 | 338.48 | 338.99 | 339.25 | 339.20 |
| MW5-11 | 719 | 4154266.96 | 4306961.38 | 3775236.52 | 413593.72 | 495.41 | 495.72 | 495.74 | 493.6 |
| MW5-13 | 733 | 4156841.29 | 4308300.04 | 3773015.54 | 414011.84 | 533.74 | 534.14 | 534.16 | 530.8 |
| MW5-15 | 815 | 4142854.23 | 4298272.52 | 3771793.82 | 410900.91 | 359.06 | 359.53 | 359.98 | 359.99 |
| MW5-17 | 705 | 4155574.68 | 4306621.78 | 3775636.31 | 413495.45 | 511.15 | 511.60 | 511.62 | 509.4 |
| MW5-18 | 830 | 4153886.97 | 4307907.38 | 3775116.98 | 413880.44 | 494.07 | 494.05 | 494.61 | 494.36 |

***Notes:***
bgs = below ground surface
MSL = mean sea level

**CDM** Camp Dresser & McKee
2581-112\sprdshts\SURVEY.XLS
11/22/96

## Table 4-29
Baldwin Park Operable Unit
Groundwater Elevation Data

| Well Name | Well Recordation Number | Screened Interval (feet bgs) | Reference Point Elevation (feet MSL)[1] | Date | Groundwater Elevation (feet MSL) |
|---|---|---|---|---|---|
| MW5-03 (Zone 10) | BPW50310 | 235-245 | 473.83 | 08/03/95 | 274.77 |
| | | | | 09/25/95 | 271.05 |
| | | | | 03/18/96 | 256.83 |
| | | | | 04/30/96 | 256.02 |
| | | | | 05/29/96 | 257.48 |
| | | | | 06/17/96 | 257.47 |
| | | | | 08/01/96 | 256.45 |
| | | | | 09/03/96 | 257.58 |
| | | | | 09/16/96 | 257.00 |
| MW5-03 (Zone 9) | BPW50309 | 300-310 | 473.83 | 08/03/95 | 274.93 |
| | | | | 09/25/95 | 271.10 |
| | | | | 03/18/96 | 256.88 |
| | | | | 04/30/96 | 256.14 |
| | | | | 05/29/96 | 257.56 |
| | | | | 06/17/96 | 257.55 |
| | | | | 08/01/96 | 256.51 |
| | | | | 09/03/96 | 257.78 |
| | | | | 09/16/96 | 257.35 |
| MW5-03 (Zone 8) | BPW50308 | 400-410 | 473.83 | 08/03/95 | 274.96 |
| | | | | 09/25/95 | 270.99 |
| | | | | 03/18/96 | 256.78 |
| | | | | 04/30/96 | 256.02 |
| | | | | 05/29/96 | 257.73 |
| | | | | 06/17/96 | 257.62 |
| | | | | 08/01/96 | 256.51 |
| | | | | 09/03/96 | 257.74 |
| | | | | 09/16/96 | 257.38 |
| MW5-03 (Zone 7) | BPW50307 | 510-520 | 473.83 | 08/03/95 | 275.01 |
| | | | | 09/25/95 | 270.95 |
| | | | | 03/18/96 | 256.64 |
| | | | | 04/30/96 | 255.93 |
| | | | | 05/29/96 | 257.83 |
| | | | | 06/17/96 | 257.58 |
| | | | | 08/01/96 | 256.38 |
| | | | | 09/03/96 | 257.78 |
| | | | | 09/16/96 | 257.45 |
| MW5-03 (Zone 6) | BPW50306 | 590-600 | 473.83 | 08/03/95 | 275.06 |
| | | | | 09/25/95 | 270.86 |
| | | | | 03/18/96 | 256.54 |
| | | | | 04/30/96 | 255.83 |
| | | | | 05/29/96 | 257.72 |
| | | | | 06/17/96 | 257.47 |
| | | | | 08/01/96 | 256.36 |
| | | | | 09/03/96 | 257.83 |
| | | | | 09/16/96 | 257.41 |
| MW5-03 (Zone 5) | BPW50305 | 670-680 | 473.83 | 08/03/95 | 275.08 |
| | | | | 09/25/95 | 270.68 |
| | | | | 03/18/96 | 256.57 |
| | | | | 04/30/96 | 255.81 |
| | | | | 05/29/96 | 257.75 |
| | | | | 06/17/96 | 257.38 |
| | | | | 08/01/96 | 256.30 |
| | | | | 09/03/96 | 257.79 |
| | | | | 09/16/96 | 257.49 |

**Table 4-29**
Baldwin Park Operable Unit
Groundwater Elevation Data

| Well Name | Well Recordation Number | Screened Interval (feet bgs) | Reference Point Elevation (feet MSL)[1] | Date | Groundwater Elevation (feet MSL) |
|---|---|---|---|---|---|
| MW5-03 (Zone 4) | BPW50304 | 810-820 | 473.83 | 08/03/95 | 274.99 |
| | | | | 09/25/95 | 270.49 |
| | | | | 03/18/96 | 256.38 |
| | | | | 04/30/96 | 255.65 |
| | | | | 05/29/96 | 257.84 |
| | | | | 06/17/96 | 257.28 |
| | | | | 08/01/96 | 256.17 |
| | | | | 09/03/96 | 257.73 |
| | | | | 09/16/96 | 257.50 |
| MW5-03 (Zone 3) | BPW50303 | 920-930 | 473.83 | 08/03/95 | 274.54 |
| | | | | 09/25/95 | 269.88 |
| | | | | 03/18/96 | 256.13 |
| | | | | 04/30/96 | 255.28 |
| | | | | 05/29/96 | 257.67 |
| | | | | 06/17/96 | 257.09 |
| | | | | 08/01/96 | 255.86 |
| | | | | 09/03/96 | 257.55 |
| | | | | 09/16/96 | 257.34 |
| MW5-03 (Zone 2) | BPW50302 | 1015-1025 | 473.83 | 08/03/95 | 274.42 |
| | | | | 09/25/95 | 269.69 |
| | | | | 03/18/96 | 255.90 |
| | | | | 04/30/96 | 255.03 |
| | | | | 05/29/96 | 257.56 |
| | | | | 06/17/96 | 256.84 |
| | | | | 08/01/96 | 255.62 |
| | | | | 09/03/96 | 257.40 |
| | | | | 09/16/96 | 257.19 |
| MW5-03 (Zone 1) | BPW50301 | 1150-1160 | 473.83 | 08/03/95 | 273.81 |
| | | | | 09/25/95 | 268.85 |
| | | | | 03/18/96 | 255.43 |
| | | | | 04/30/96 | 254.46 |
| | | | | 05/29/96 | 257.21 |
| | | | | 06/17/96 | 256.19 |
| | | | | 08/01/96 | 255.02 |
| | | | | 09/03/96 | 256.93 |
| | | | | 09/16/96 | 256.89 |
| MW5-05 (Zone 4) | BPW50504 | 218 - 228 | 342.18 | 08/16/95 | 263.14 |
| | | | | 10/12/95 | 257.56 |
| | | | | 10/30/95 | 256.25 |
| | | | | 03/20/96 | 248.52 |
| | | | | 04/30/96 | 246.86 |
| | | | | 05/30/96 | 246.29 |
| | | | | 06/21/96 | 245.41 |
| | | | | 08/02/96 | 243.65 |
| | | | | 09/04/96 | 243.52 |
| | | | | 09/23/96 | 243.73 |

**Table 4-29**
Baldwin Park Operable Unit
Groundwater Elevation Data

| Well Name | Well Recordation Number | Screened Interval (feet bgs) | Reference Point Elevation (feet MSL)[1] | Date | Groundwater Elevation (feet MSL) |
|---|---|---|---|---|---|
| MW5-05 (Zone 3) | BPW50503 | 380 - 390 | 342.18 | 08/16/95 | 261.72 |
| | | | | 10/12/95 | 255.88 |
| | | | | 10/30/95 | 254.89 |
| | | | | 03/20/96 | 247.66 |
| | | | | 04/30/96 | 245.35 |
| | | | | 05/30/96 | 245.57 |
| | | | | 06/21/96 | 244.33 |
| | | | | 08/02/96 | 242.28 |
| | | | | 09/04/96 | 242.85 |
| | | | | 09/23/96 | 243.25 |
| MW5-05 (Zone 2) | BPW50502 | 464 - 474 | 342.18 | 08/16/95 | 261.83 |
| | | | | 10/12/95 | 255.99 |
| | | | | 10/30/95 | 255.00 |
| | | | | 03/20/96 | 247.65 |
| | | | | 04/30/96 | 245.35 |
| | | | | 05/30/96 | 245.49 |
| | | | | 06/21/96 | 244.26 |
| | | | | 08/02/96 | 242.23 |
| | | | | 09/04/96 | 242.81 |
| | | | | 09/23/96 | 243.14 |
| MW5-05 (Zone 1) | BPW50501 | 552 - 562 | 342.18 | 08/16/95 | 260.10 |
| | | | | 10/12/95 | 254.03 |
| | | | | 10/30/95 | 253.23 |
| | | | | 03/20/96 | 246.09 |
| | | | | 04/30/96 | 243.14 |
| | | | | 05/30/96 | 244.13 |
| | | | | 06/21/96 | 242.81 |
| | | | | 08/02/96 | 240.71 |
| | | | | 09/04/96 | 241.74 |
| | | | | 09/23/96 | 242.21 |
| MW5-08 (Zone 4) | BPW50804 | 380 - 390 | 338.48 | 08/02/96 | 241.44 |
| | | | | 08/13/96 | 241.49 |
| | | | | 09/04/96 | 241.75 |
| | | | | 09/24/96 | 242.08 |
| MW5-08 (Zone 3) | BPW50803 | 554 - 564 | 338.48 | 08/02/96 | 240.07 |
| | | | | 08/13/96 | 240.55 |
| | | | | 09/04/96 | 241.05 |
| | | | | 09/24/96 | 241.56 |
| MW5-08 (Zone 2) | BPW50802 | 670 - 680 | 338.48 | 08/02/96 | 239.70 |
| | | | | 08/13/96 | 240.40 |
| | | | | 09/04/96 | 241.02 |
| | | | | 09/24/96 | 241.52 |
| MW5-08 (Zone 1) | BPW50801 | 795 - 805 | 338.48 | 08/02/96 | 239.54 |
| | | | | 08/13/96 | 239.86 |
| | | | | 09/04/96 | 240.88 |
| | | | | 09/24/96 | 241.47 |

**Table 4-29**
Baldwin Park Operable Unit
Groundwater Elevation Data

| Well Name | Well Recordation Number | Screened Interval (feet bgs) | Reference Point Elevation (feet MSL)[1] | Date | Groundwater Elevation (feet MSL) |
|---|---|---|---|---|---|
| MW5-11 (Zone 3) | BPW51103 | 310 - 320 | 495.41 | 10/10/95 | 269.92 |
| | | | | 11/13/95 | 267.43 |
| | | | | 03/14/96 | 256.94 |
| | | | | 05/01/96 | 256.31 |
| | | | | 05/30/96 | 258.74 |
| | | | | 06/24/96 | 258.65 |
| | | | | 08/01/96 | 257.37 |
| | | | | 09/03/96 | 259.55 |
| | | | | 09/20/96 | 259.39 |
| MW5-11 (Zone 2) | BPW51102 | 530 - 540 | 495.41 | 10/10/95 | 269.37 |
| | | | | 11/13/95 | 267.17 |
| | | | | 03/14/96 | 256.74 |
| | | | | 05/01/96 | 256.14 |
| | | | | 05/30/96 | 258.79 |
| | | | | 06/24/96 | 258.64 |
| | | | | 08/01/96 | 257.32 |
| | | | | 09/03/96 | 259.65 |
| | | | | 09/20/96 | 259.30 |
| MW5-11 (Zone 1) | BPW51101 | 690 - 700 | 495.41 | 10/10/95 | 269.07 |
| | | | | 11/13/95 | 267.04 |
| | | | | 03/14/96 | 256.55 |
| | | | | 05/01/96 | 256.04 |
| | | | | 05/30/96 | 258.85 |
| | | | | 06/24/96 | 258.50 |
| | | | | 08/01/96 | 257.19 |
| | | | | 09/03/96 | 259.64 |
| | | | | 09/20/96 | 258.21 |
| MW5-13 (Zone 3) | BPW51303 | 340 - 350 | 533.74 | 01/18/96 | 262.87 |
| | | | | 02/15/96 | 260.38 |
| | | | | 03/14/96 | 258.79 |
| | | | | 05/01/96 | 258.49 |
| | | | | 05/29/96 | 261.50 |
| | | | | 06/21/96 | 261.29 |
| | | | | 08/02/96 | 260.11 |
| | | | | 09/03/96 | 263.03 |
| | | | | 09/19/96 | 262.74 |
| MW5-13 (Zone 2) | BPW51302 | 520 - 530 | 533.74 | 01/18/96 | 262.69 |
| | | | | 02/15/96 | 260.08 |
| | | | | 03/14/96 | 258.56 |
| | | | | 05/01/96 | 258.42 |
| | | | | 05/29/96 | 261.73 |
| | | | | 06/21/96 | 261.40 |
| | | | | 08/02/96 | 260.14 |
| | | | | 09/03/96 | 263.14 |
| | | | | 09/19/96 | 262.91 |
| MW5-13 (Zone 1) | BPW51301 | 684 - 694 | 533.74 | 01/18/96 | 262.40 |
| | | | | 02/15/96 | 259.79 |
| | | | | 03/14/96 | 258.27 |
| | | | | 05/01/96 | 258.28 |
| | | | | 05/29/96 | 261.77 |
| | | | | 06/21/96 | 261.15 |
| | | | | 08/02/96 | 260.05 |
| | | | | 09/03/96 | 263.13 |
| | | | | 09/19/96 | 262.85 |

**Table 4-29**
Baldwin Park Operable Unit
Groundwater Elevation Data

| Well Name | Well Recordation Number | Screened Interval (feet bgs) | Reference Point Elevation (feet MSL)[1] | Date | Groundwater Elevation (feet MSL) |
|---|---|---|---|---|---|
| MW5-15 (Zone 3) | BPW51503 | 235 - 245 | 359.06 | 07/09/96 | 246.13 |
| | | | | 08/02/96 | 244.78 |
| | | | | 08/13/96 | 244.99 |
| | | | | 09/04/96 | 245.23 |
| | | | | 09/23/96 | 245.45 |
| MW5-15 (Zone 2) | BPW51502 | 450-460 | 359.06 | 07/09/96 | 245.77 |
| | | | | 08/02/96 | 244.40 |
| | | | | 08/13/96 | 244.74 |
| | | | | 09/04/96 | 245.03 |
| | | | | 09/23/96 | 245.32 |
| MW5-15 (Zone 1) | BPW51501 | 670 - 680 | 359.06 | 07/09/96 | 244.72 |
| | | | | 08/02/96 | 243.35 |
| | | | | 08/13/96 | 243.99 |
| | | | | 09/04/96 | 244.43 |
| | | | | 09/23/96 | 244.87 |
| MW5-17 (Zone 3) | BPW51703 | 305 - 315 | 511.15 | 10/30/95 | 268.07 |
| | | | | 11/30/95 | 265.58 |
| | | | | 03/15/96 | 255.89 |
| | | | | 04/30/96 | 256.07 |
| | | | | 05/30/96 | 259.30 |
| | | | | 06/24/96 | 258.87 |
| | | | | 08/02/96 | 257.46 |
| | | | | 09/04/96 | 260.69 |
| | | | | 09/20/96 | 260.58 |
| MW5-17 (Zone 2) | BPW51702 | 540 - 550 | 511.15 | 10/30/95 | 267.95 |
| | | | | 11/30/95 | 265.09 |
| | | | | 03/15/96 | 255.53 |
| | | | | 04/30/96 | 255.96 |
| | | | | 05/30/96 | 259.46 |
| | | | | 06/24/96 | 258.92 |
| | | | | 08/02/96 | 257.58 |
| | | | | 09/04/96 | 260.63 |
| | | | | 09/20/96 | 260.39 |
| MW5-17 (Zone 1) | BPW51701 | 698 - 708 | 511.15 | 10/30/95 | 267.74 |
| | | | | 11/30/95 | 264.79 |
| | | | | 03/15/96 | 255.45 |
| | | | | 04/30/96 | 255.99 |
| | | | | 05/30/96 | 259.57 |
| | | | | 06/24/96 | 258.87 |
| | | | | 08/02/96 | 257.54 |
| | | | | 09/04/96 | 260.55 |
| | | | | 09/20/96 | 260.43 |
| MW5-18 (Zone 3) | BPW51803 | 500 - 510 | 494.07 | 06/03/96 | 259.33 |
| | | | | 07/09/96 | 259.03 |
| | | | | 08/01/96 | 259.10 |
| | | | | 09/03/96 | 259.76 |
| | | | | 09/23/96 | 259.66 |
| MW5-18 (Zone 2) | BPW51802 | 630 - 640 | 494.07 | 06/03/96 | 259.18 |
| | | | | 07/09/96 | 258.92 |
| | | | | 08/01/96 | 258.05 |
| | | | | 09/03/96 | 259.77 |
| | | | | 09/23/96 | 259.70 |

**Table 4-29**
Baldwin Park Operable Unit
Groundwater Elevation Data

| Well Name | Well Recordation Number | Screened Interval (feet bgs) | Reference Point Elevation (feet MSL)[1] | Date | Groundwater Elevation (feet MSL) |
|---|---|---|---|---|---|
| MW5-18 (Zone 1) | BPW51801 | 780 - 790 | 494.07 | 06/03/96 | 259.09 |
| | | | | 07/09/96 | 258.61 |
| | | | | 08/01/96 | 257.87 |
| | | | | 09/03/96 | 259.74 |
| | | | | 09/23/96 | 259.69 |
| EPA MW5-1 (Zone 13) | EPAW5113 | 216-226 | 402.70 | 05/01/96 | 251.18 |
| | | | | 05/29/96 | 251.73 |
| | | | | 06/19/96 | 251.64 |
| | | | | 08/01/96 | 249.66 |
| | | | | 09/03/96 | 250.12 |
| | | | | 09/17/96 | 250.22 |
| EPA MW5-1 (Zone 12) | EPAW5112 | 287-297 | 402.70 | 03/11/96 | 252.94 |
| | | | | 05/01/96 | 251.07 |
| | | | | 05/29/96 | 251.73 |
| | | | | 06/19/96 | 251.57 |
| | | | | 08/01/96 | 249.61 |
| | | | | 09/03/96 | 250.17 |
| | | | | 09/17/96 | 250.28 |
| EPA MW5-1 (Zone 11) | EPAW5111 | 335-345 | 402.70 | 03/11/96 | 252.82 |
| | | | | 05/01/96 | 251.12 |
| | | | | 05/29/96 | 251.80 |
| | | | | 06/19/96 | 251.50 |
| | | | | 08/01/96 | 249.58 |
| | | | | 09/03/96 | 250.19 |
| | | | | 09/17/96 | 250.24 |
| EPA MW5-1 (Zone 10) | EPAW5110 | 430-440 | 402.70 | 03/11/96 | 252.90 |
| | | | | 05/01/96 | 251.06 |
| | | | | 05/29/96 | 251.86 |
| | | | | 06/19/96 | 251.56 |
| | | | | 08/01/96 | 249.61 |
| | | | | 09/03/96 | 250.38 |
| | | | | 09/17/96 | 250.37 |
| EPA MW5-1 (Zone 9) | EPAW5109 | 523-533 | 402.70 | 03/11/96 | 252.81 |
| | | | | 05/01/96 | 250.93 |
| | | | | 05/29/96 | 251.90 |
| | | | | 06/19/96 | 251.44 |
| | | | | 08/01/96 | 249.61 |
| | | | | 09/03/96 | 250.38 |
| | | | | 09/17/96 | 250.44 |
| EPA MW5-1 (Zone 8) | EPAW5108 | 640-650 | 402.70 | 03/11/96 | 252.69 |
| | | | | 05/01/96 | 250.75 |
| | | | | 05/29/96 | 251.84 |
| | | | | 06/19/96 | 251.40 |
| | | | | 08/01/96 | 249.62 |
| | | | | 09/03/96 | 250.42 |
| | | | | 09/17/96 | 250.56 |
| EPA MW5-1 (Zone 7) | EPAW5107 | 765-775 | 402.70 | 03/11/96 | 252.62 |
| | | | | 05/01/96 | 250.63 |
| | | | | 05/29/96 | 251.83 |
| | | | | 06/19/96 | 251.33 |
| | | | | 08/01/96 | 249.50 |
| | | | | 09/03/96 | 250.47 |
| | | | | 09/17/96 | 250.55 |

## Table 4-29
Baldwin Park Operable Unit
Groundwater Elevation Data

| Well Name | Well Recordation Number | Screened Interval (feet bgs) | Reference Point Elevation (feet MSL)[1] | Date | Groundwater Elevation (feet MSL) |
|---|---|---|---|---|---|
| EPA MW5-1 (Zone 6) | EPAW5106 | 875-885 | 402.70 | 03/11/96 | 252.50 |
| | | | | 05/01/96 | 250.45 |
| | | | | 05/29/96 | 251.76 |
| | | | | 06/19/96 | 251.23 |
| | | | | 08/01/96 | 249.38 |
| | | | | 09/03/96 | 250.42 |
| | | | | 09/17/96 | 250.53 |
| EPA MW5-1 (Zone 5) | EPAW5105 | 1030-1040 | 402.70 | 03/11/96 | 251.63 |
| | | | | 05/01/96 | 249.33 |
| | | | | 05/29/96 | 251.38 |
| | | | | 06/19/96 | 250.50 |
| | | | | 08/01/96 | 248.71 |
| | | | | 09/03/96 | 250.08 |
| | | | | 09/17/96 | 250.32 |
| EPA MW5-1 (Zone 4) | EPAW5105 | 1123-1133 | 402.70 | 03/11/96 | 251.54 |
| | | | | 05/01/96 | 249.24 |
| | | | | 05/29/96 | 251.22 |
| | | | | 06/19/96 | 250.34 |
| | | | | 08/01/96 | 248.63 |
| | | | | 09/03/96 | 250.07 |
| | | | | 09/17/96 | 250.23 |
| EPA MW5-1 (Zone 3) | EPAW5103 | 1256-1266 | 402.70 | 03/11/96 | 251.25 |
| | | | | 05/01/96 | 248.99 |
| | | | | 05/29/96 | 251.14 |
| | | | | 06/19/96 | 250.19 |
| | | | | 08/01/96 | 248.46 |
| | | | | 09/03/96 | 250.01 |
| | | | | 09/17/96 | 250.14 |
| EPA MW5-1 (Zone 2) | EPAW5102 | 1387-1397 | 402.70 | 03/11/96 | 251.19 |
| | | | | 05/01/96 | 248.86 |
| | | | | 05/29/96 | 251.11 |
| | | | | 06/19/96 | 250.18 |
| | | | | 08/01/96 | 248.40 |
| | | | | 09/03/96 | 249.98 |
| | | | | 09/17/96 | 250.17 |
| EPA MW5-1 (Zone 1) | EPAW5101 | 1495-1505 | 402.70 | 03/11/96 | 250.81 |
| | | | | 05/01/96 | 248.69 |
| | | | | 05/29/96 | 250.94 |
| | | | | 06/19/96 | 249.90 |
| | | | | 08/01/96 | 248.19 |
| | | | | 09/03/96 | 249.96 |
| | | | | 09/17/96 | 250.08 |
| ALRC MW-1R | W11AZW1R | 258-455 | 503.73 | 03/14/96 | 259.48 |
| | | | | 03/29/96 | 259.12 |
| | | | | 04/26/96 | 258.71 |
| | | | | 05/31/96 | 259.98 |
| | | | | 06/13/96 | 260.31 |
| | | | | 07/29/96 | 259.56 |
| | | | | 08/30/96 | 260.31 |
| | | | | 10/04/96 | 261.46 |
| | | | | 10/29/96 | 260.15 |

## Table 4-29
Baldwin Park Operable Unit
Groundwater Elevation Data

| Well Name | Well Recordation Number | Screened Interval (feet bgs) | Reference Point Elevation (feet MSL)[1] | Date | Groundwater Elevation (feet MSL) |
|---|---|---|---|---|---|
| ALRC MW-3 | W11AZW03 | 180-385 | 551.41 | 03/13/96 | 259.31 |
| | | | | 03/29/96 | 259.26 |
| | | | | 04/26/96 | 258.93 |
| | | | | 06/11/96 | 262.49 |
| | | | | 07/29/96 | 261.24 |
| | | | | 08/30/96 | 264.06 |
| | | | | 10/04/96 | 265.99 |
| | | | | 10/29/96 | 263.28 |
| ALRC MW-9 | W11AZW09 | 195-450 | 554.75 | 03/13/96 | 261.46 |
| | | | | 03/29/96 | 261.14 |
| | | | | 04/26/96 | 260.55 |
| | | | | 05/31/96 | 263.17 |
| | | | | 06/11/96 | 263.40 |
| | | | | 07/29/96 | 262.71 |
| | | | | 08/30/96 | 264.31 |
| | | | | 10/04/96 | 266.00 |
| | | | | 10/29/96 | 264.40 |
| Norac MW-1 | W10NCMW1 | 255-310 | 503.12 | 01/31/96 | 259.17 |
| | | | | 03/05/96 | 257.15 |
| | | | | 03/15/96 | 257.04 |
| | | | | 05/01/96 | 256.76 |
| | | | | 06/03/96 | 259.47 |
| | | | | 06/27/96 | 259.32 |
| | | | | 08/08/96 | 258.50 |
| | | | | 09/27/96 | 260.87 |
| LA County 3030F (Key Well) | Z1000006 | 80-284 | 387.70 | 01/25/96 | 252.34 |
| | | | | 02/29/96 | 250.51 |
| | | | | 03/28/96 | 250.42 |
| | | | | 04/25/96 | 249.10 |
| | | | | 05/30/96 | 249.57 |
| | | | | 06/27/96 | 248.98 |
| | | | | 07/25/96 | 247.61 |
| | | | | 08/30/96 | 248.10 |
| | | | | 09/27/96 | 248.70 |
| | | | | 10/25/96 | 248.80 |
| LPVCWD 02 | 1901460 | 600-947 | 336.78 | 07/10/96 | 227.21# |
| | | | | 09/26/96 | 226.78# |
| Glendora 07G | 01900831 | 252-474 | 533.01 | 07/08/96 | 265.95 |
| | | | | 09/24/96 | 266.51 |
| LA County Santa Fe 1 | 08000070 | 290-435 | 516.67 | 04/30/96 | 255.13 |
| | | | | 08/02/96 | 258.95 |
| | | | | 09/04/96 | 264.18 |
| | | | | 09/04/96 | 264.18 |
| Polopolus 01 | 01902169 | 120-280 | 417.48 | 10/01/96 | 252.48 |
| | | | | 07/01/96 | 251.28 |
| SGVWC B4B | 51902858 | 920-1154 | 317.6 | 03/01/96 | 236.60 |
| | | | | 04/01/96 | 228.60 |
| | | | | 05/01/96 | 229.60 |
| | | | | 06/01/96 | 228.60 |
| | | | | 07/01/96 | 227.60 |
| SGVWC B6C | 71903093 | 275-506 | 332.99 | 03/01/96 | 244.99 |
| | | | | 04/01/96 | 243.99 |
| | | | | 05/01/96 | 242.99 |
| | | | | 06/01/96 | 241.99 |
| | | | | 07/01/96 | 239.99 |

# Table 4-29
Baldwin Park Operable Unit
Groundwater Elevation Data

| Well Name | Well Recordation Number | Screened Interval (feet bgs) | Reference Point Elevation (feet MSL)[1] | Date | Groundwater Elevation (feet MSL) |
|---|---|---|---|---|---|
| SWS 139W1 | 01901598 | 120-349 | 368.90 | 06/27/96 | 244.90 |
| | | | | 09/23/96 | 243.90 |
| VCWD 2 (WEST MAINE) | 01900028 | 250-580 | 425.74 | 09/30/96 | 252.74 |
| | | | | 07/31/96 | 247.74 |
| | | | | 08/30/96 | 251.24 |
| VCWD 3 (MORADA) | 01900029 | 275-585 | 484.45 | 03/29/96 | 265.45 |
| | | | | 04/30/96 | 264.45 |
| | | | | 05/31/96 | 261.95 |
| | | | | 06/27/96 | 262.95 |
| | | | | 07/31/96 | 262.45 |
| | | | | 08/30/96 | 258.95 |
| | | | | 09/24/96 | 263.45 |
| | | | | 09/30/96 | 264.45 |
| | | | | 10/31/96 | 263.45 |
| VCWD 5 (PADDY LANE) | 01900031 | 300-585 | 347.19 | 03/29/96 | 246.69 |
| | | | | 04/30/96 | 243.69 |
| | | | | 05/31/96 | 244.19 |
| | | | | 06/27/96 | 243.19 |
| | | | | 07/31/96 | 241.69 |
| | | | | 08/30/96 | 241.69 |
| | | | | 09/26/96 | 242.19 |
| | | | | 09/30/96 | 240.69 |
| | | | | 10/31/96 | 240.19 |
| VCWD 9 (BIG DALTON) | 01900035 | 250-582 | 367.67 | 03/29/96 | 244.17 |
| | | | | 05/31/96 | 248.67 |
| | | | | 06/27/96 | 248.17 |
| | | | | 07/31/96 | 246.67 |
| | | | | 08/30/96 | 246.67 |
| | | | | 09/23/96 | 244.67 |
| | | | | 09/30/96 | 247.17 |
| VCWD 10 (LANTE) | 08000060 | 275-577 | 455.93 | 01/28/96 | 253.93 |
| | | | | 01/31/96 | 254.43 |
| | | | | 03/31/96 | 250.93 |
| | | | | 04/30/96 | 251.93 |
| | | | | 05/31/96 | 251.93 |
| | | | | 06/29/96 | 251.93 |
| | | | | 06/30/96 | 251.93 |
| | | | | 07/31/96 | 250.93 |
| | | | | 08/30/96 | 251.96 |
| | | | | 09/30/96 | 253.93 |
| | | | | 10/31/96 | 252.93 |
| VCWD 11 (PALM AVE) | 08000039 | 540-602 | 363.49 | 03/29/96 | 247.49 |
| | | | | 04/30/96 | 245.49 |
| | | | | 05/31/96 | 246.49 |
| | | | | 06/27/96 | 245.49 |
| | | | | 07/31/96 | 243.49 |
| | | | | 08/30/96 | 244.99 |
| | | | | 09/25/96 | 246.49 |
| | | | | 09/30/96 | 244.49 |
| | | | | 10/31/96 | 243.49 |

***Notes:***
bgs = below ground surface
MSL = Mean Sea Level
[1] For wells other than MP wells, reference point elevations were provided by owner or watermaster.
[#]Elevation provided by purveyor appears to be pumping, rather than static, elevations.

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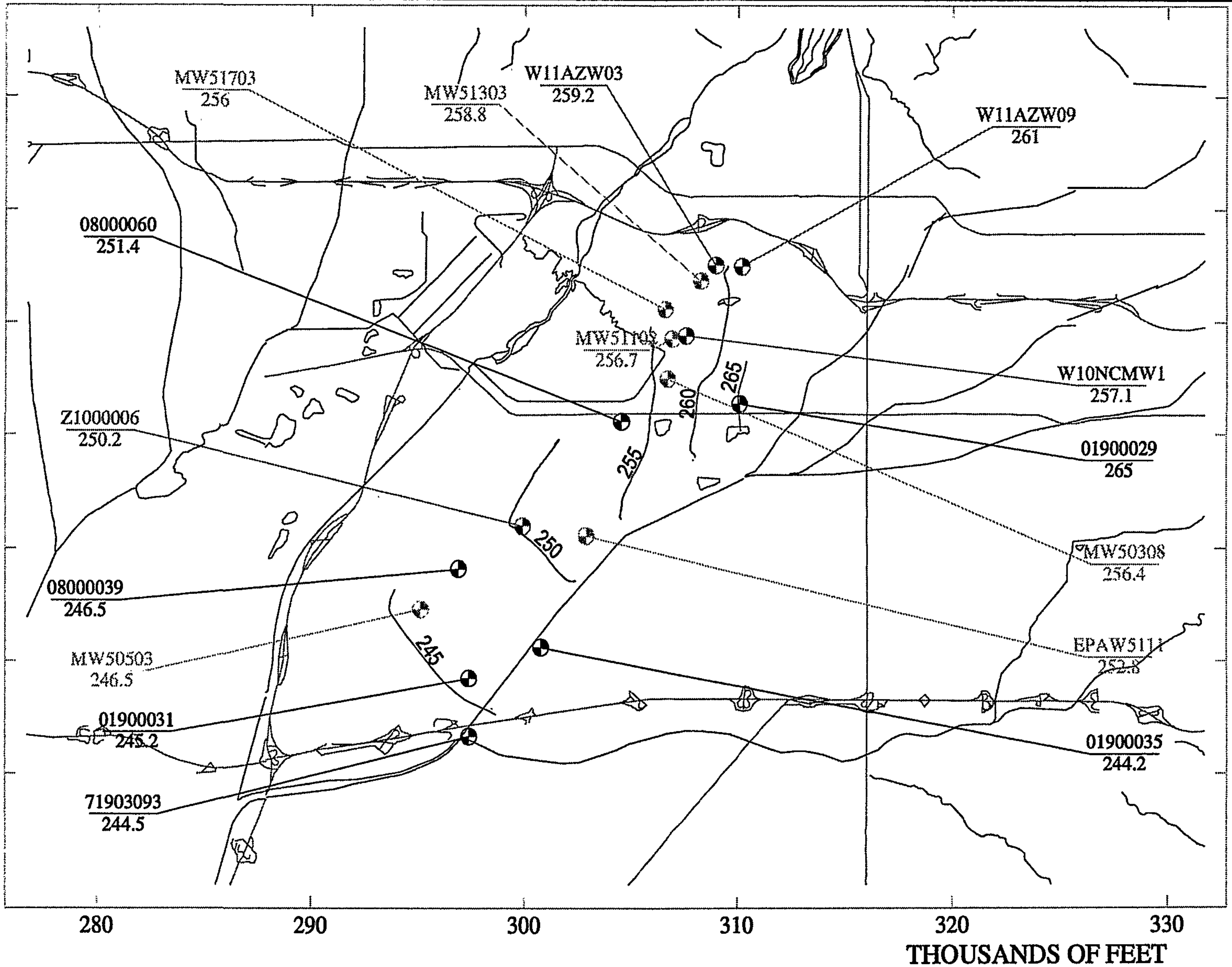
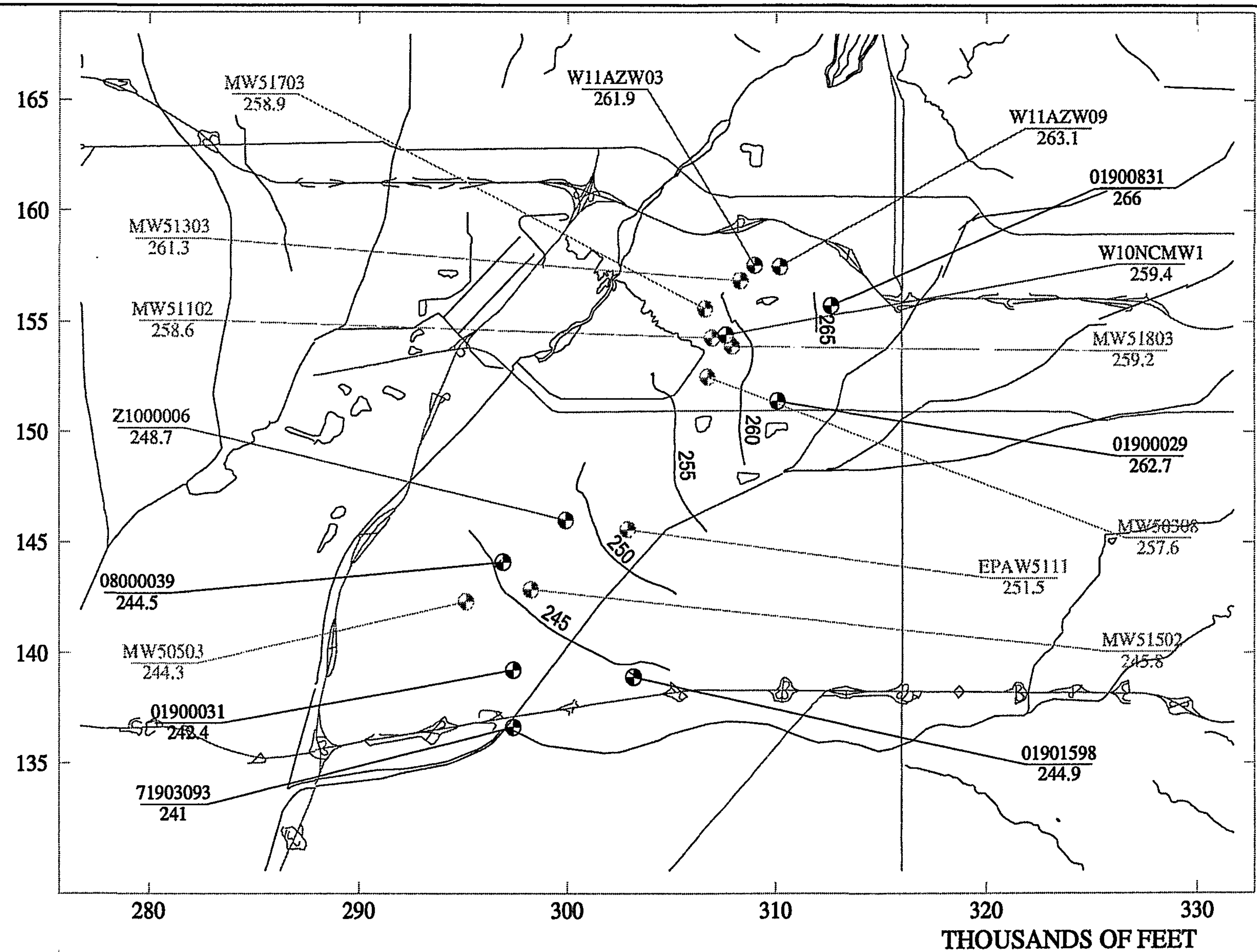
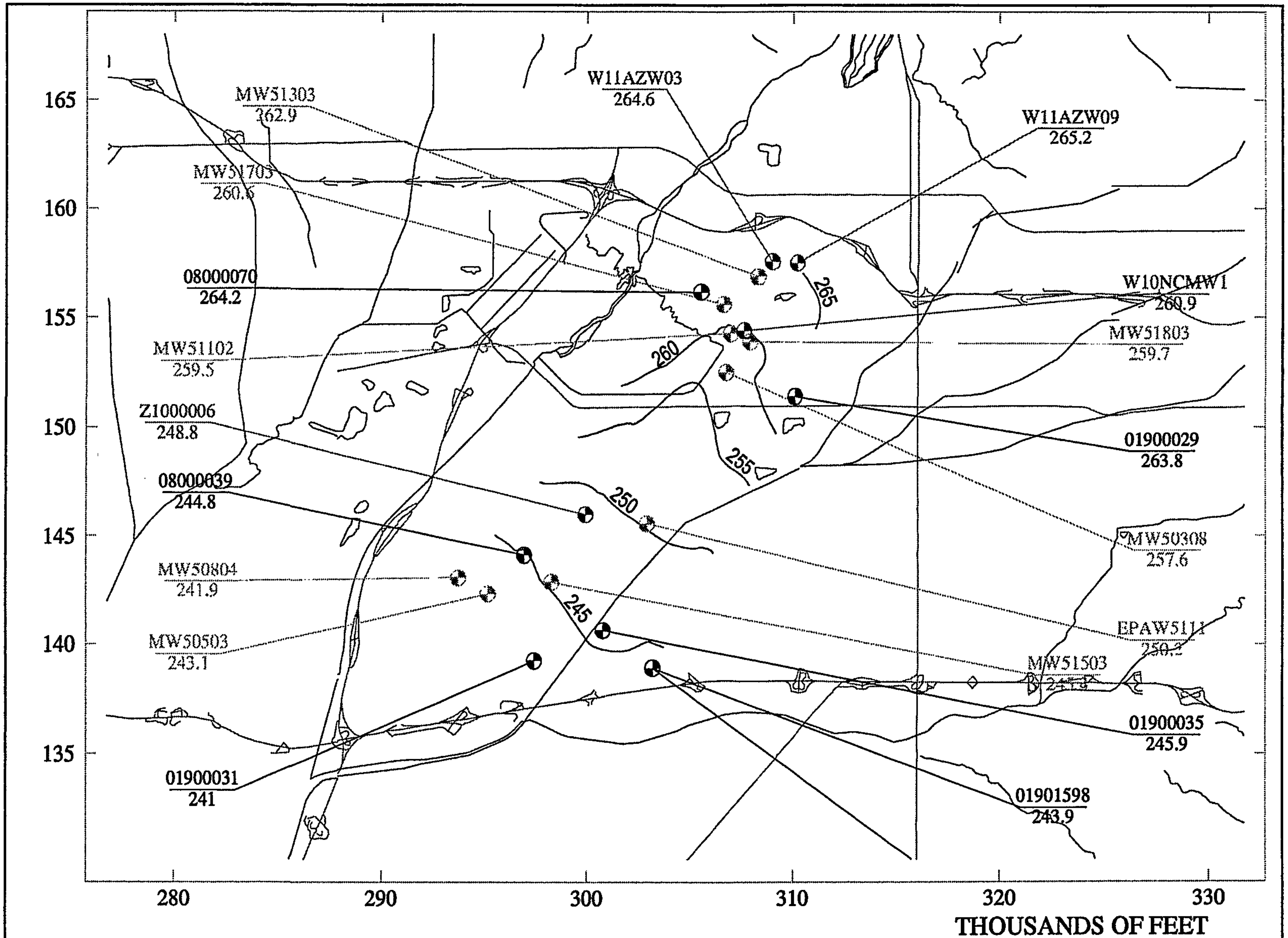


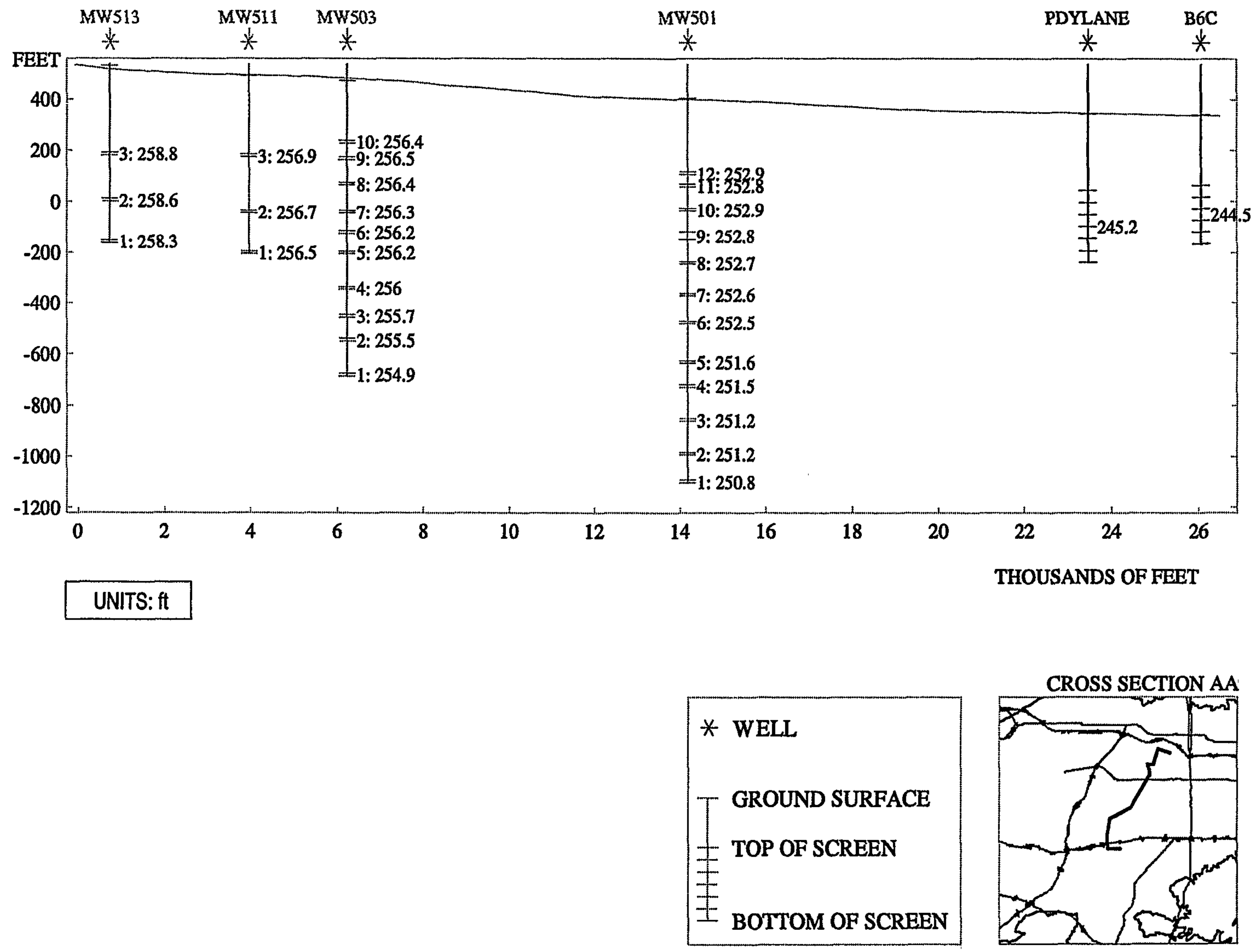

| | | |
|---|---|---|
| FIGURE 4-24 | Contoured Average Water Levels<br>March - April 1996<br><br>Baldwin Park Operable Unit | **CDM**<br>*environmental engineers, scientists, planners, & management consultants* |




| FIGURE 4-25 | Contoured Average Water Levels<br>June - July 1996<br><br>Baldwin Park Operable Unit | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|




| FIGURE 4-26 | Contoured Average Water Levels<br>September - October 1996<br><br>Baldwin Park Operable Unit | CDM<br>*environmental engineers, scientists, planners, & management consultants* |
|---|---|---|




| | | |
|---|---|---|
| FIGURE 4-27 | Cross Section Showing Average Water Levels<br>March-April 1996<br><br>Baldwin Park Operable Unit Pre-Remedial Design | **CDM**<br>*environmental engineers, scientists, planners, & management consultants* |

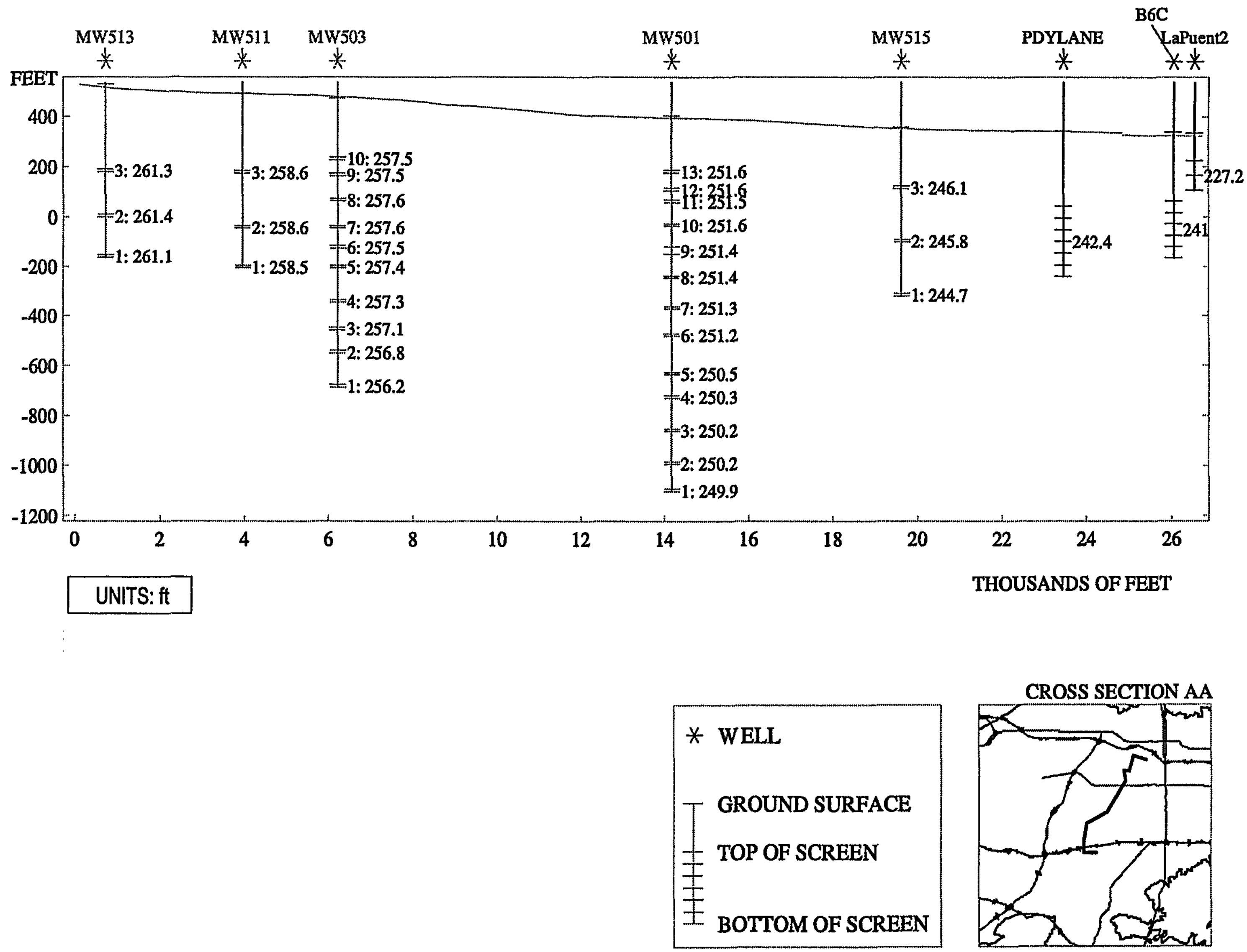
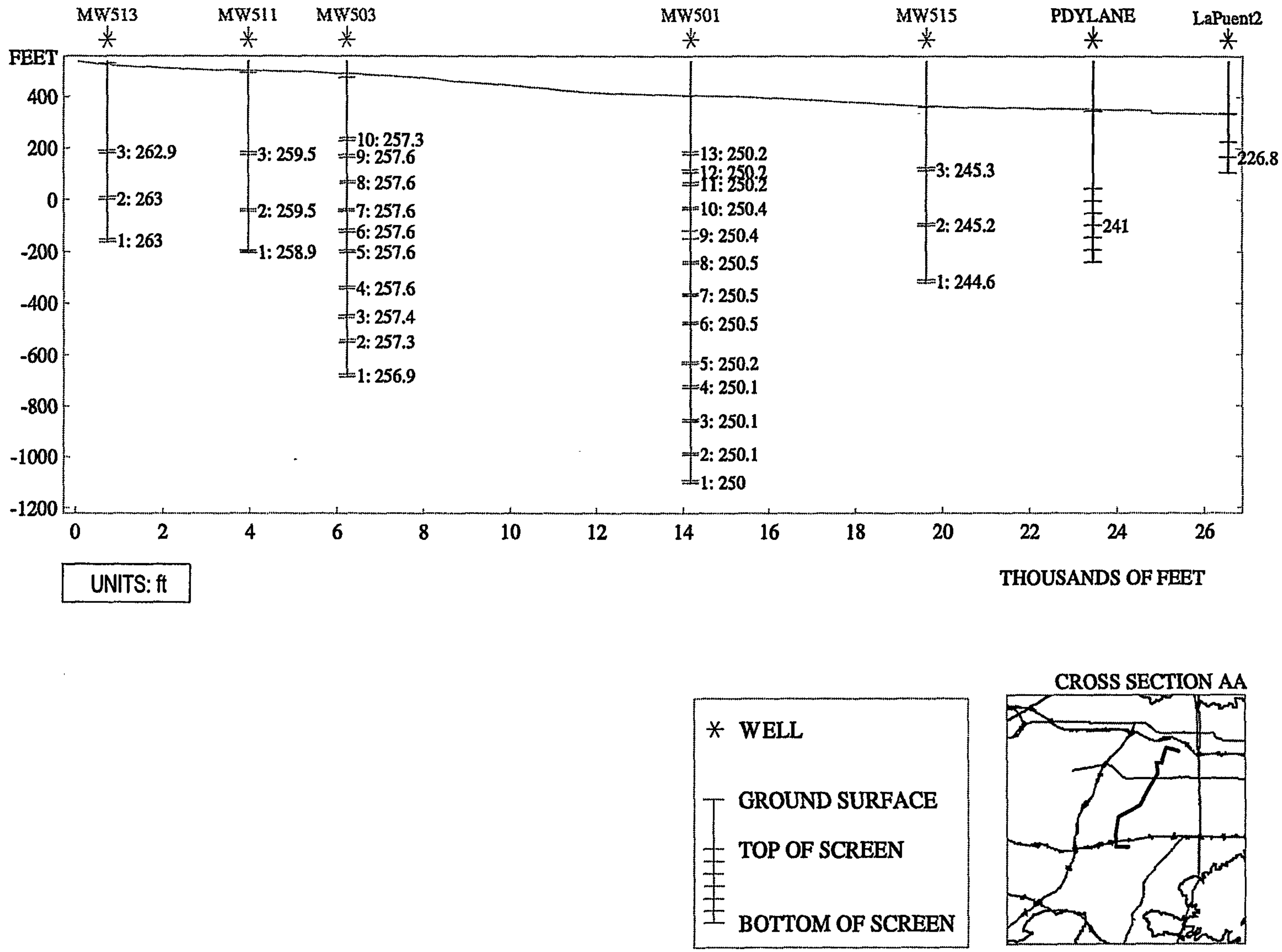



FIGURE 4-28

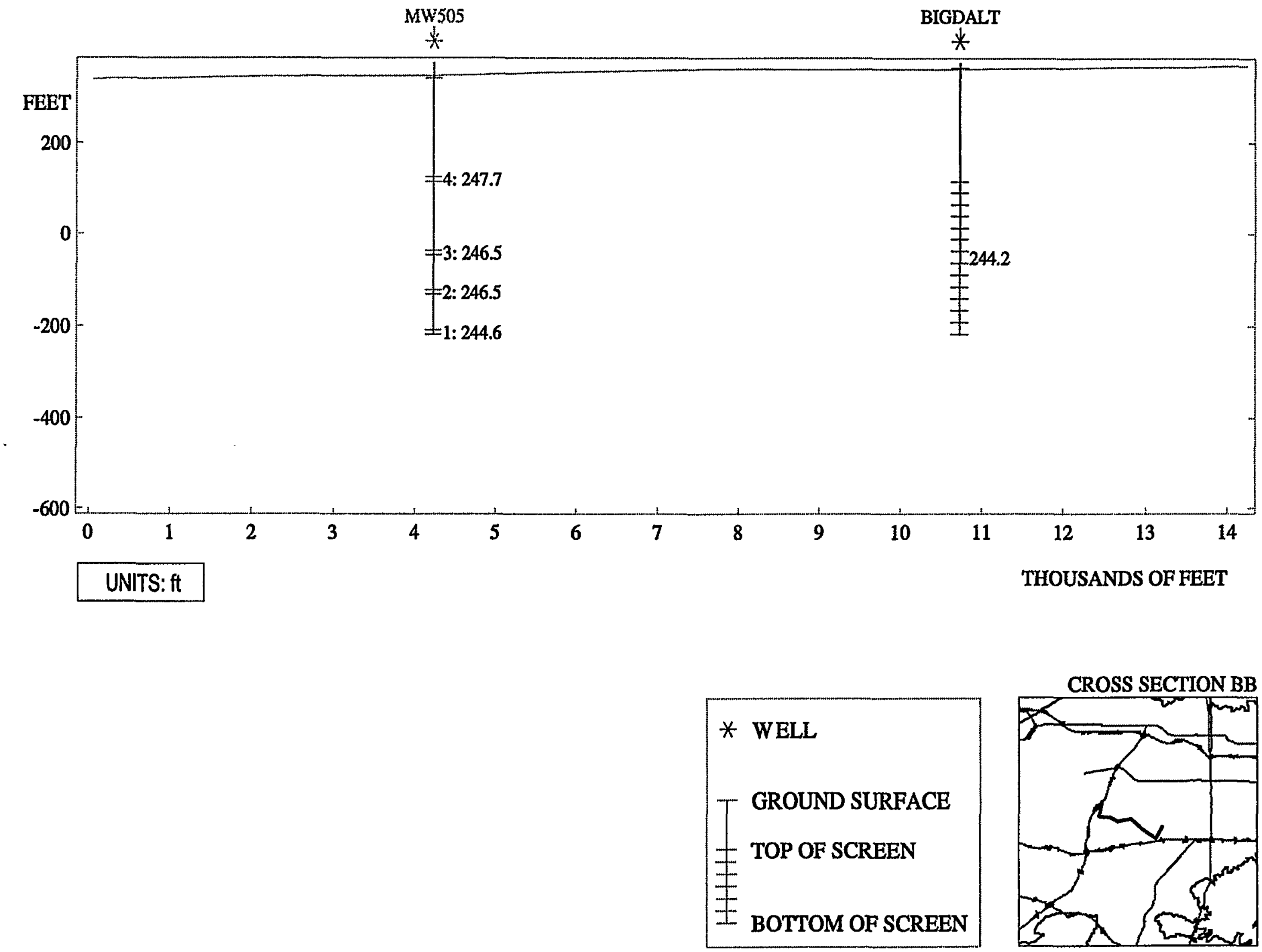
Cross Section Showing Average Water Levels
June-July 1996

Baldwin Park Operable Unit Pre-Remedial Design

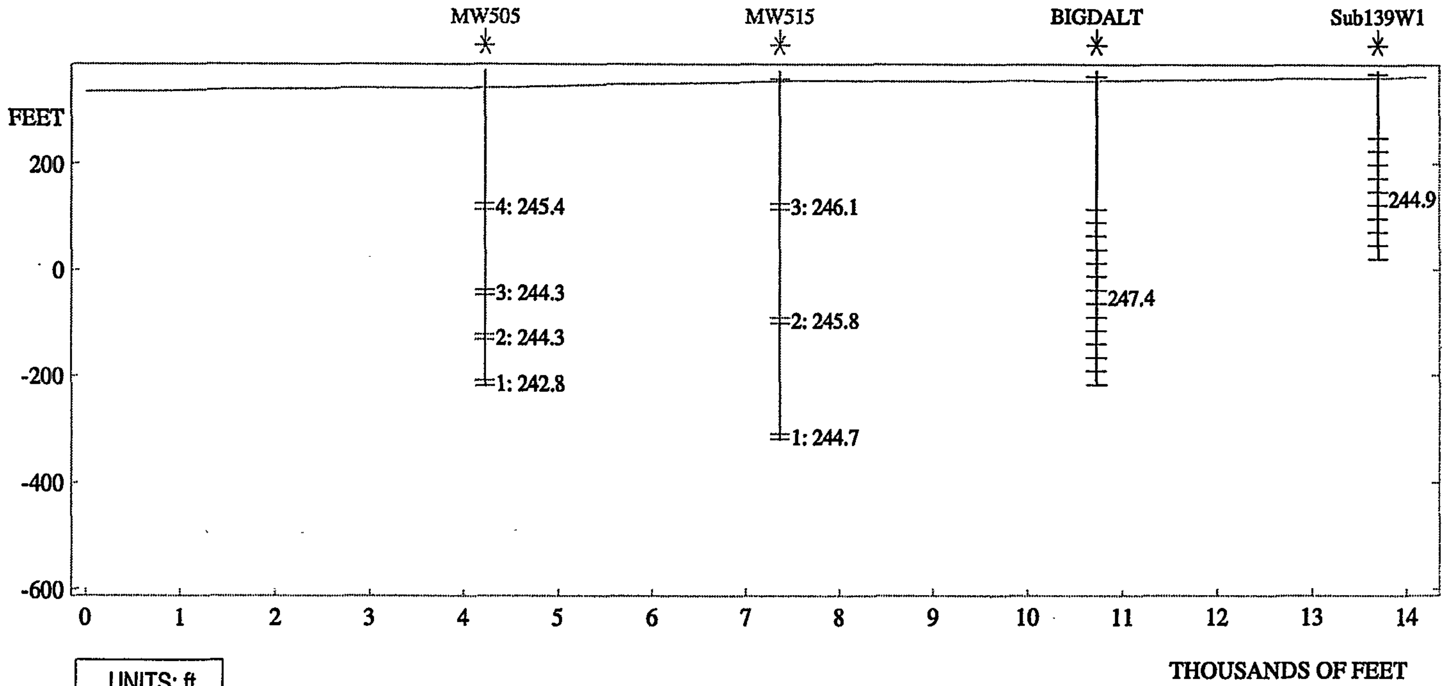
CDM
environmental engineers, scientists, planners, & management consultants




| | | |
|---|---|---|
| FIGURE 4-29 | Cross Section Showing Average Water Levels<br>September-October 1996<br><br>Baldwin Park Operable Unit Pre-Remedial Design | **CDM**<br>*environmental engineers, scientists, planners, & management consultants* |

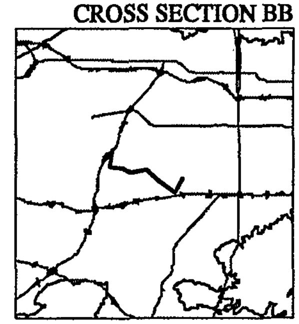



| | | |
|---|---|---|
| FIGURE 4-30 | Cross Section Showing Average Water Levels<br>March-April 1996<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |




UNITS: ft

CROSS SECTION BB



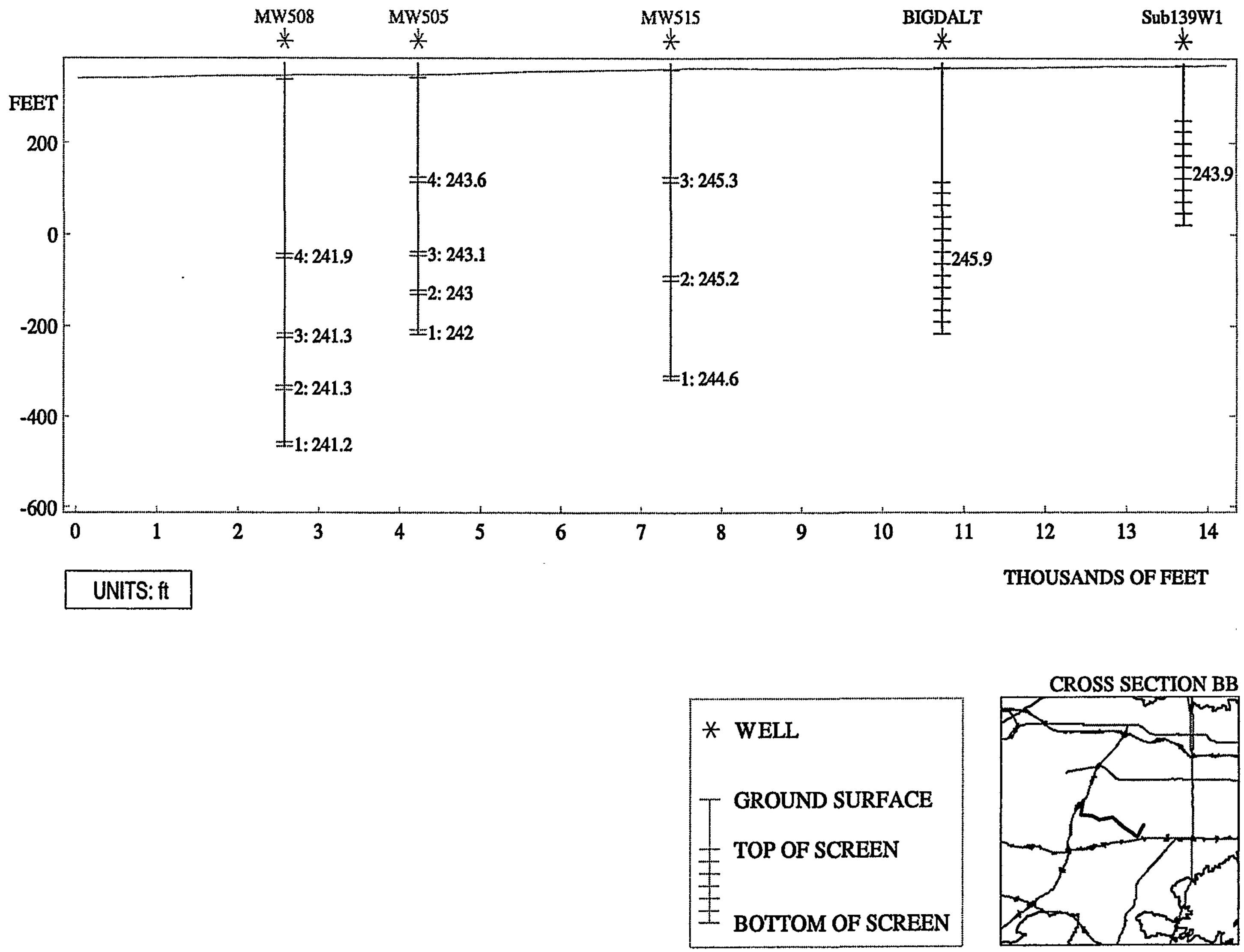
* WELL

GROUND SURFACE

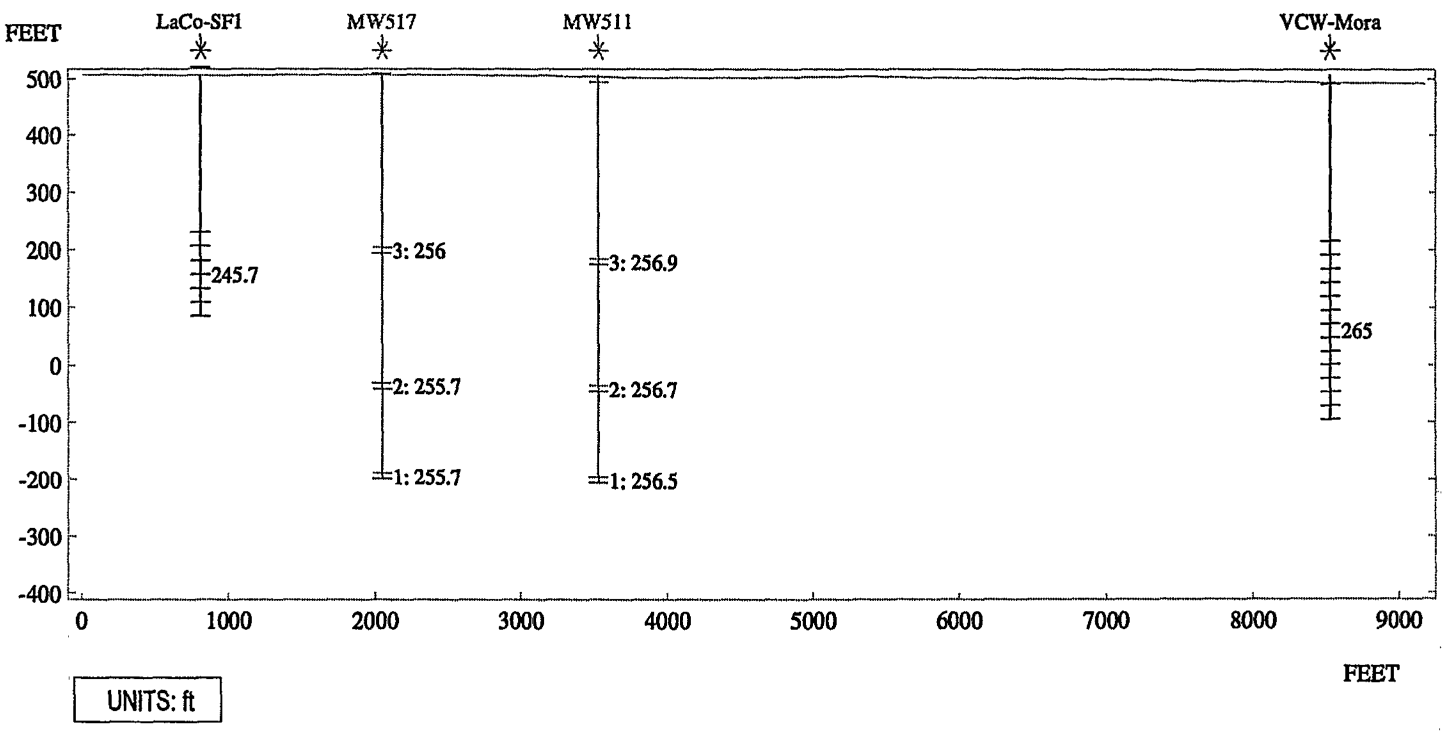
TOP OF SCREEN

BOTTOM OF SCREEN

| | | |
|---|---|---|
| FIGURE 4-31 | Cross Section Showing Average Water Levels<br>June-July 1996<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |




| FIGURE 4-32 | Cross Section Showing Average Water Levels<br>September-October 1996<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|



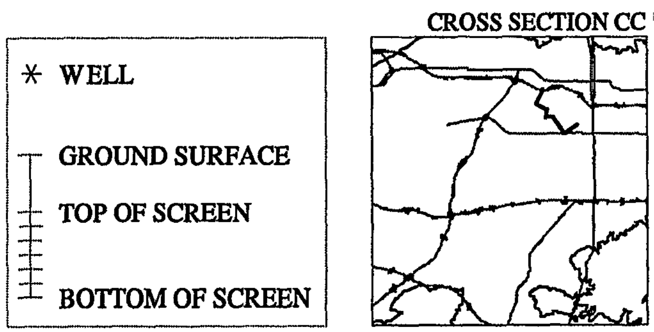




FIGURE 4-33

Cross Section Showing Average Water Levels
March-April 1996

Baldwin Park Operable Unit Pre-Remedial Design

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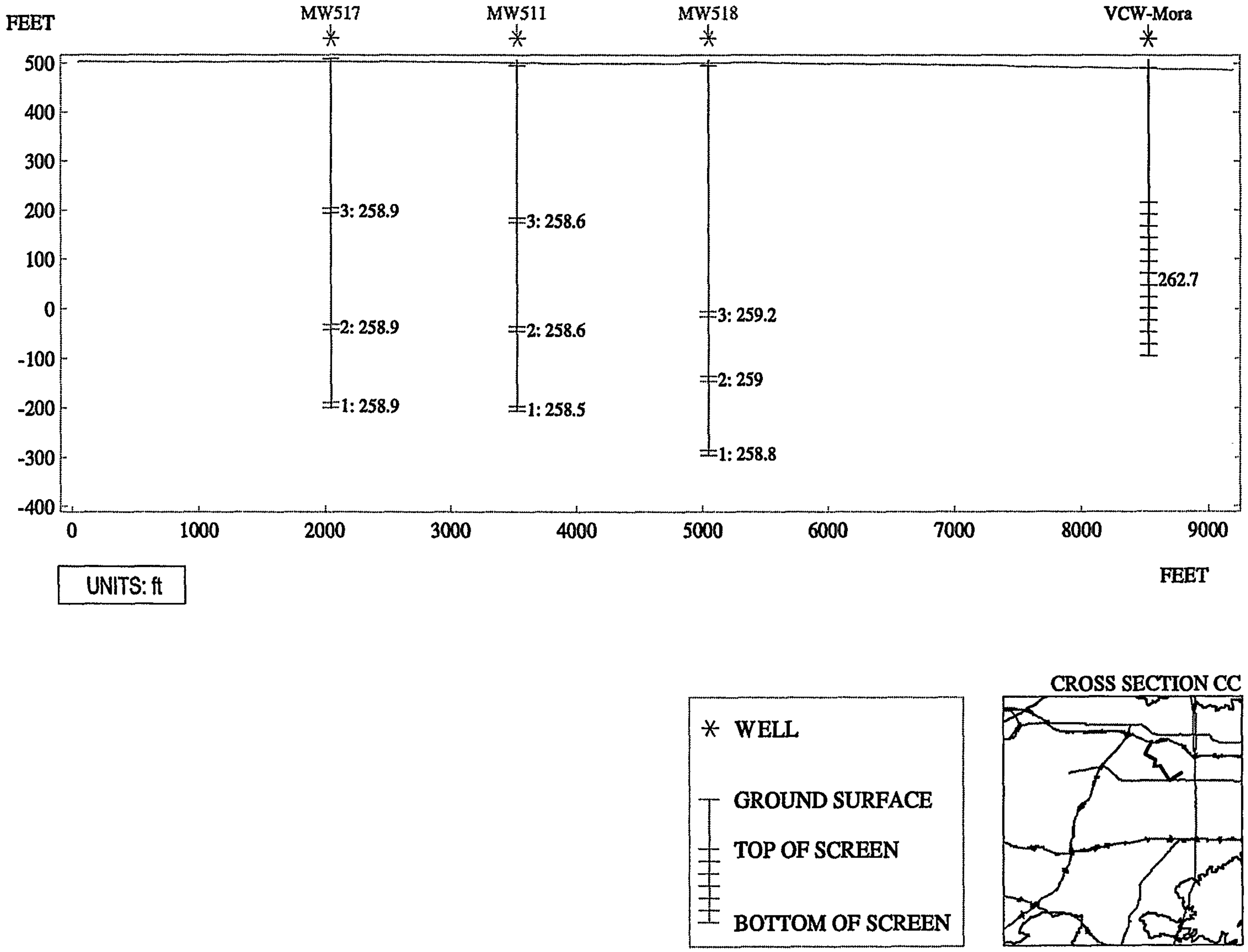
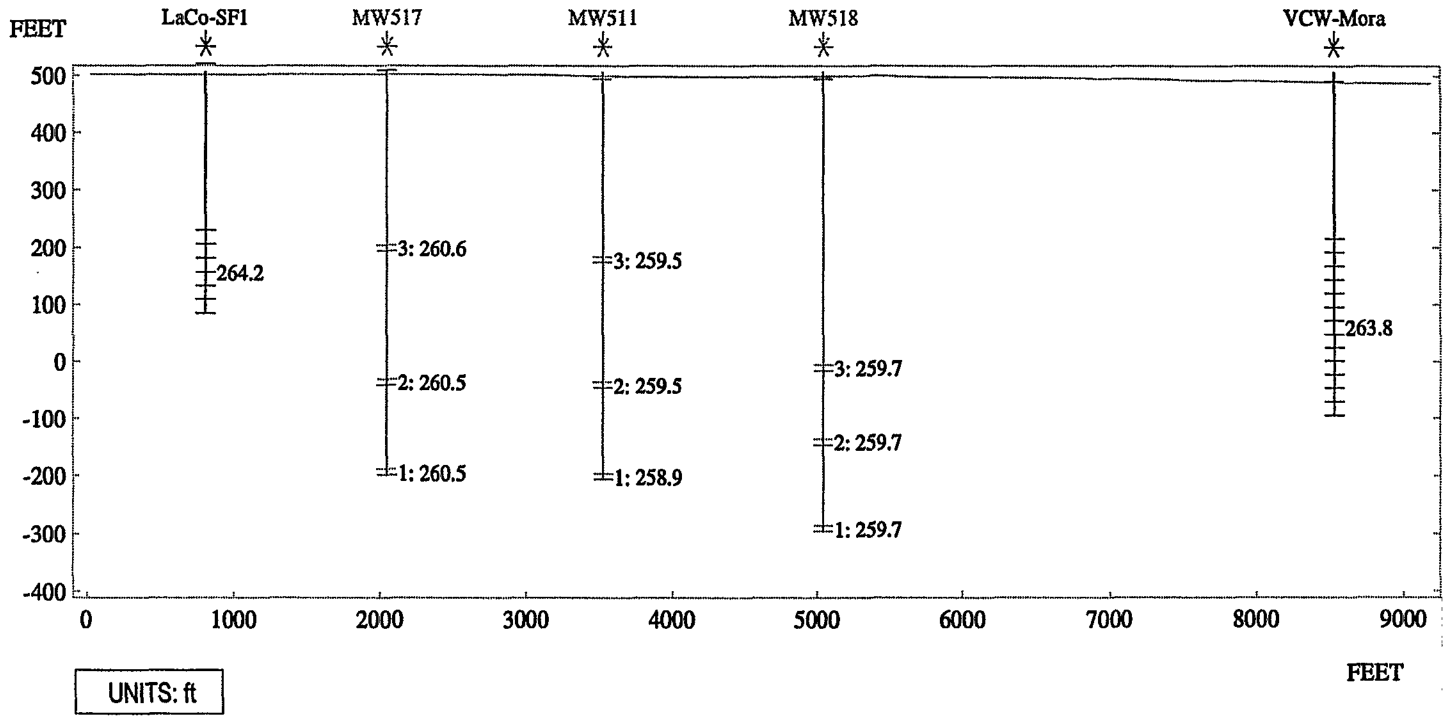



| FIGURE 4-34 | Cross Section Showing Average Water Levels<br>June-July 1996<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|




CROSS SECTION CC

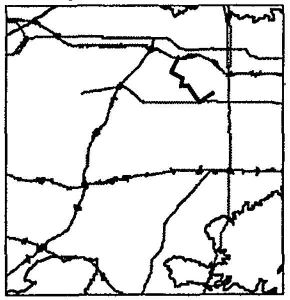


FIGURE
4-35

Cross Section Showing Average Water Levels
September-October 1996

Baldwin Park Operable Unit Pre-Remedial Design

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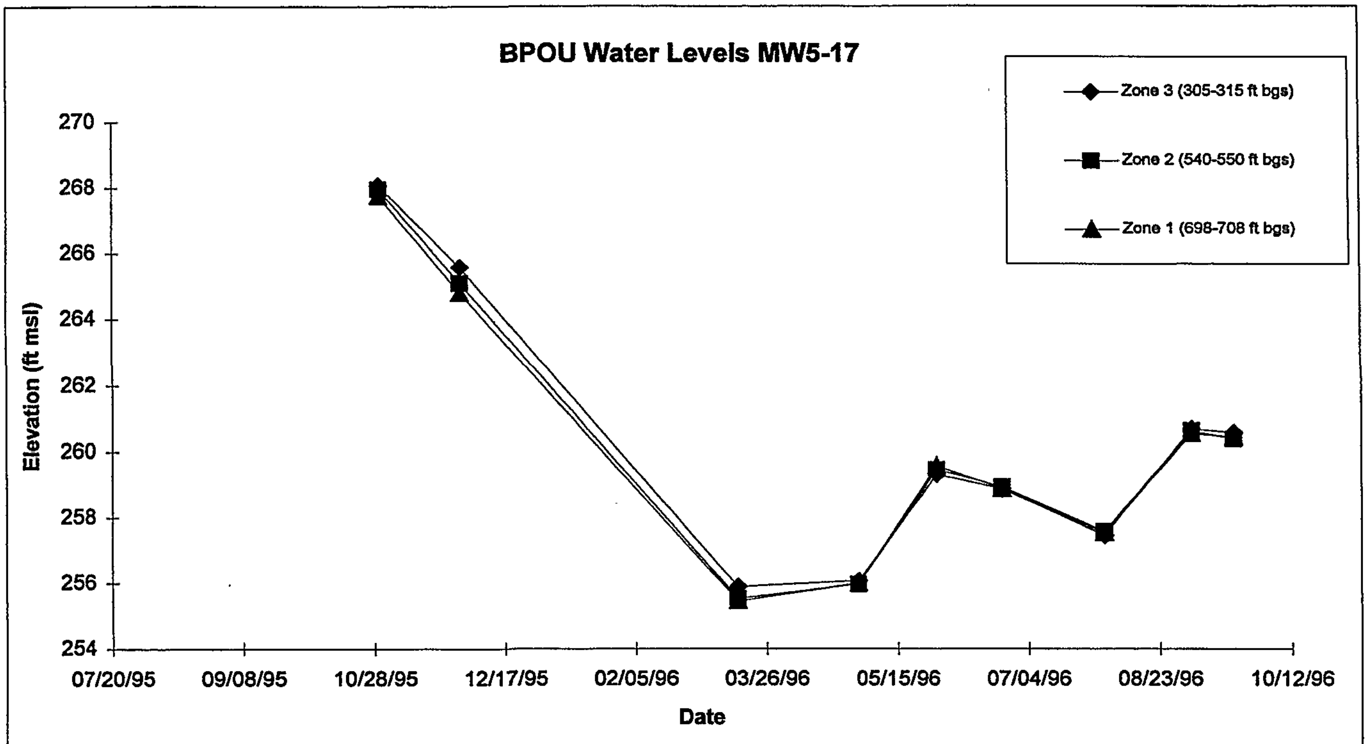
**Figure 4-36**
Baldwin Park Operable Unit Pre-Remedial Design
Groundwater Monitoring Well Hydrograph
MW5-13 and MW5-17



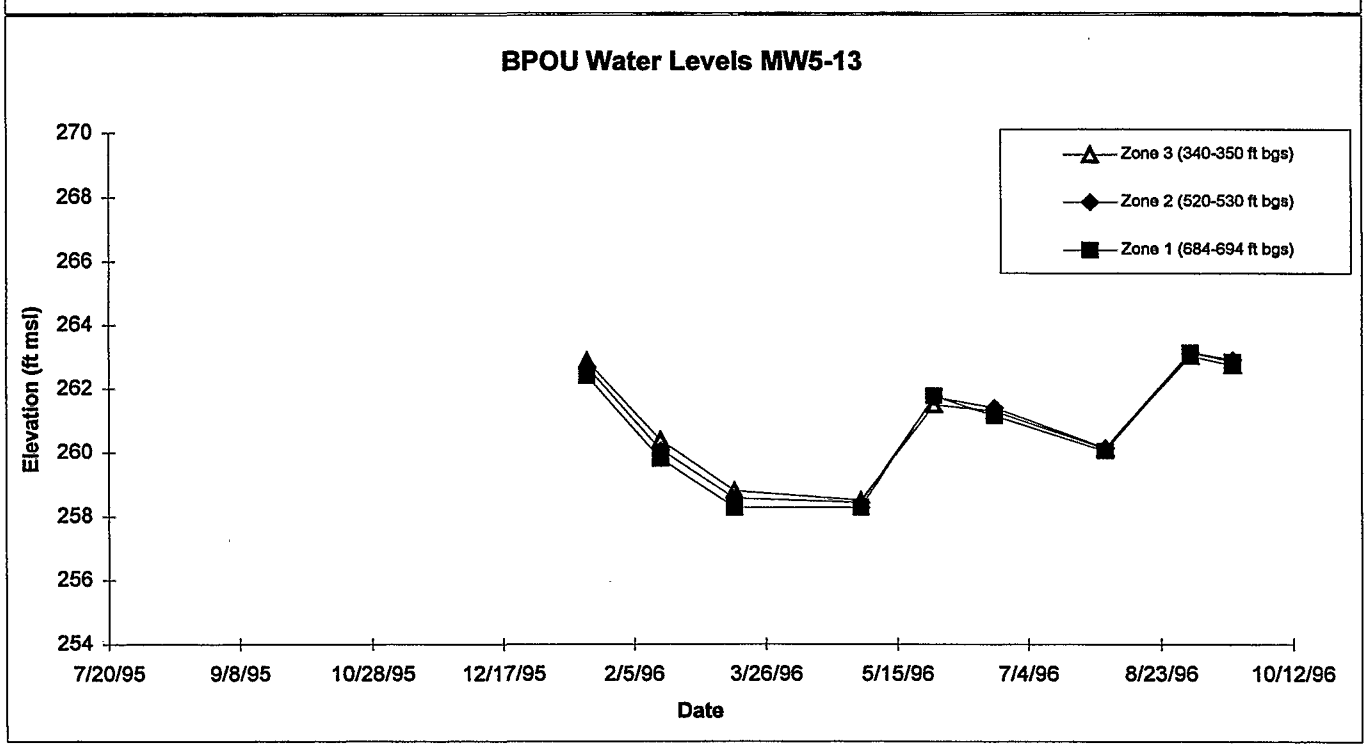
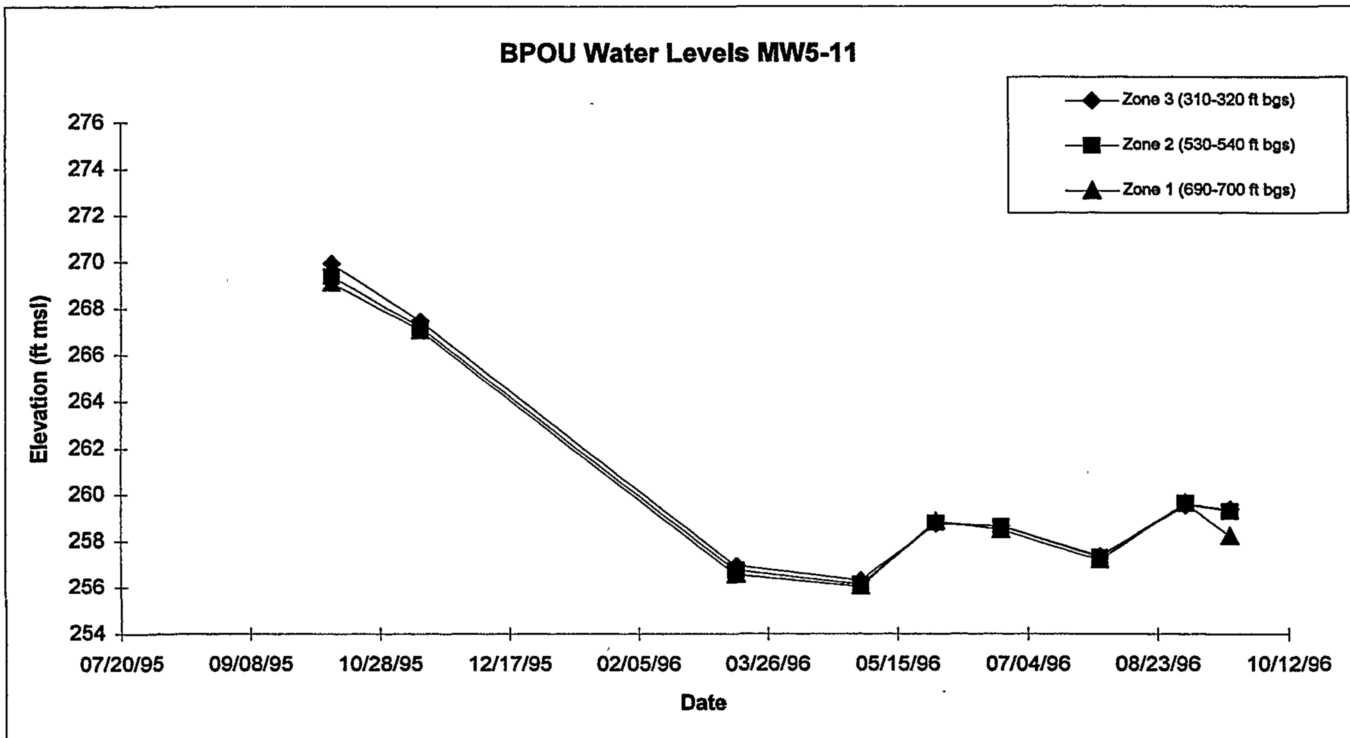



**Figure 4-37**
Baldwin Park Operable Unit Pre-Remedial Design
Groundwater Monitoring Well Hydrograph
MW5-11 and MW5-18



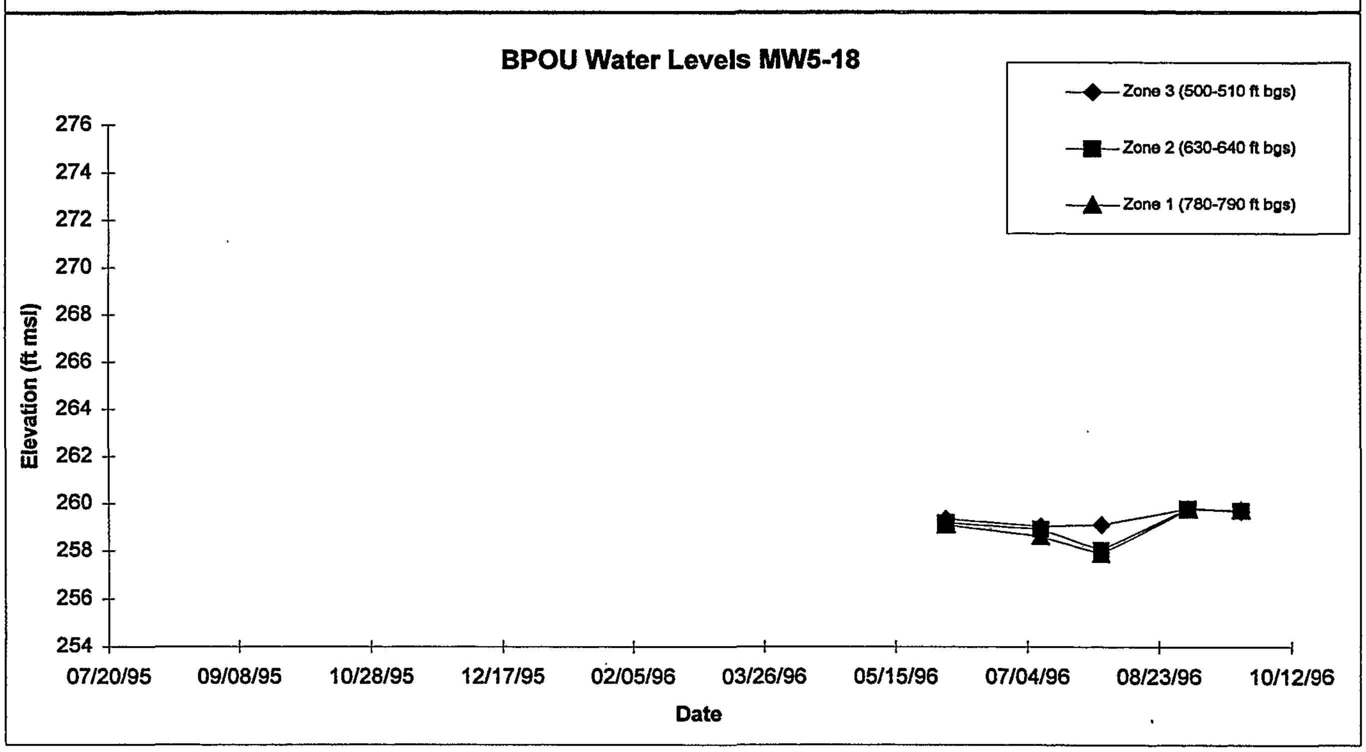




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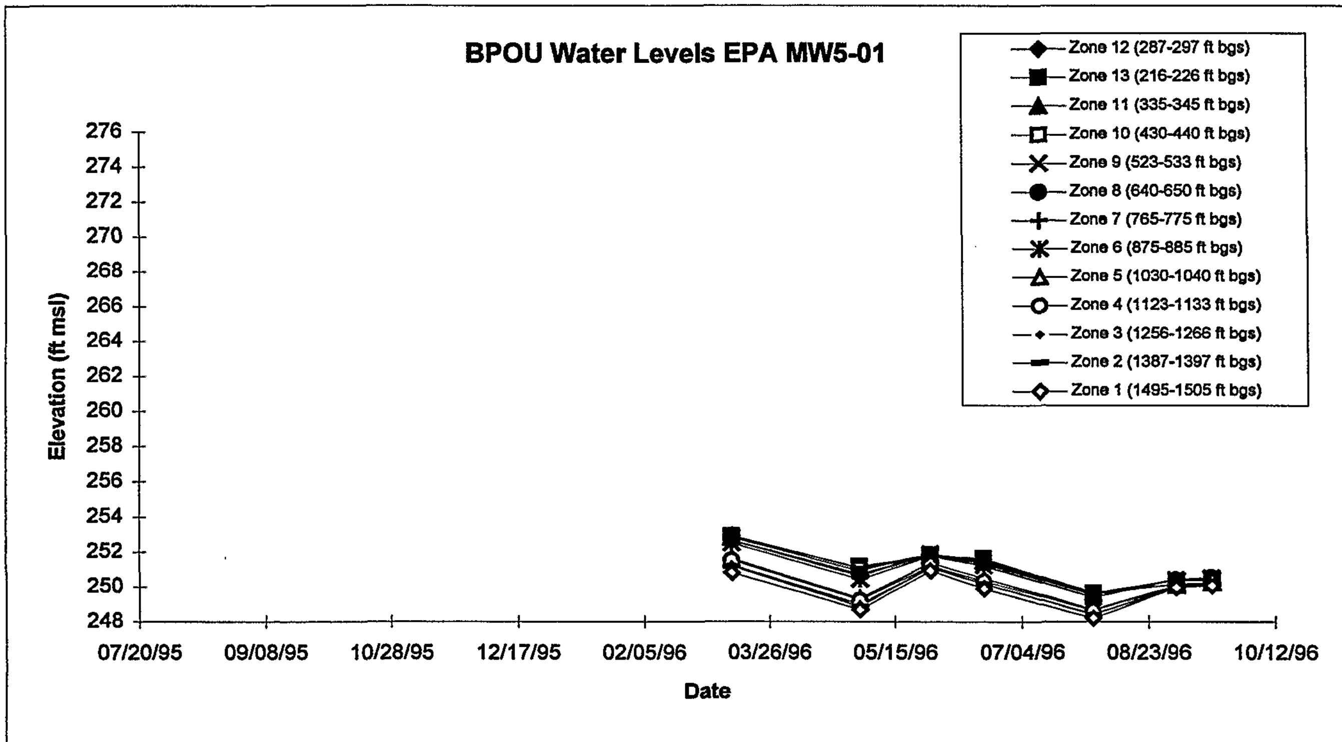
**Figure 4-38**
Baldwin Park Operable Unit Pre-Remedial Design
Groundwater Monitoring Well Hydrograph
MW5-01 and MW5-03



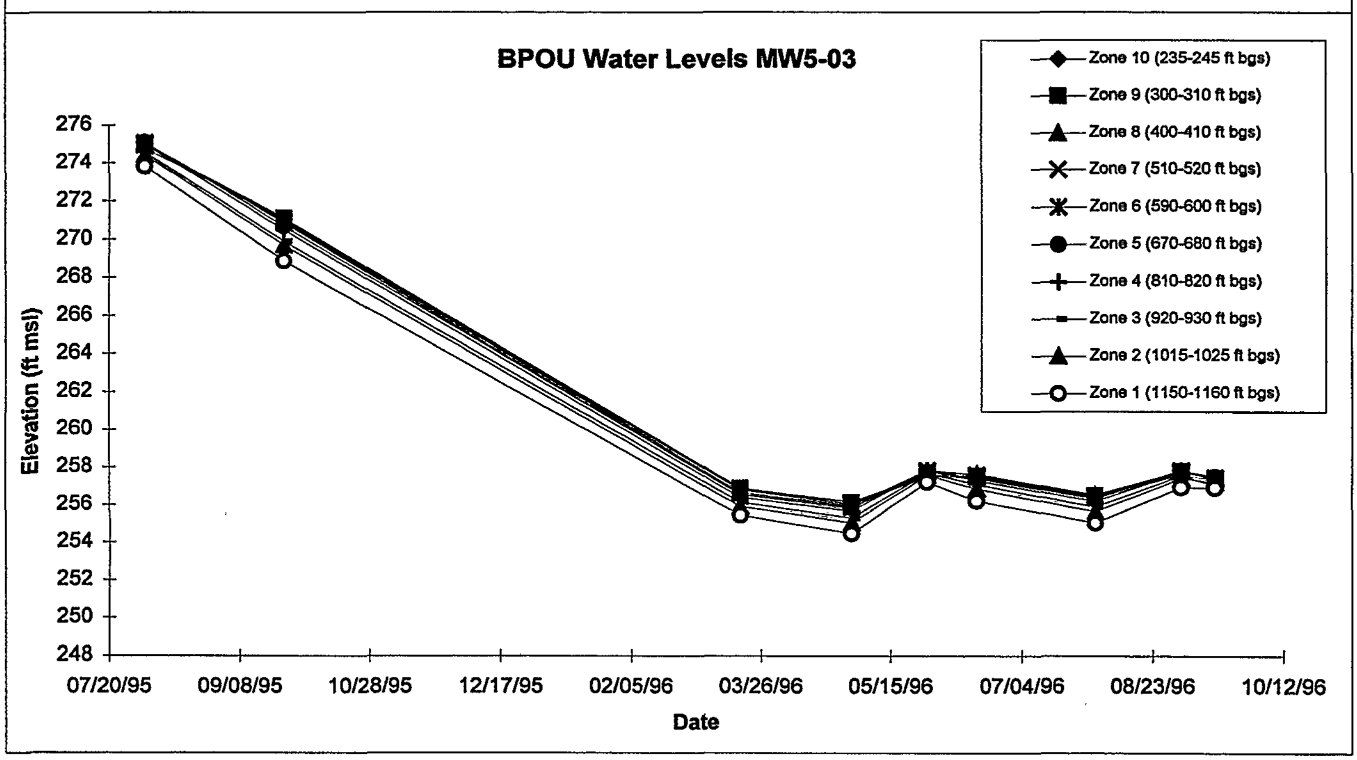




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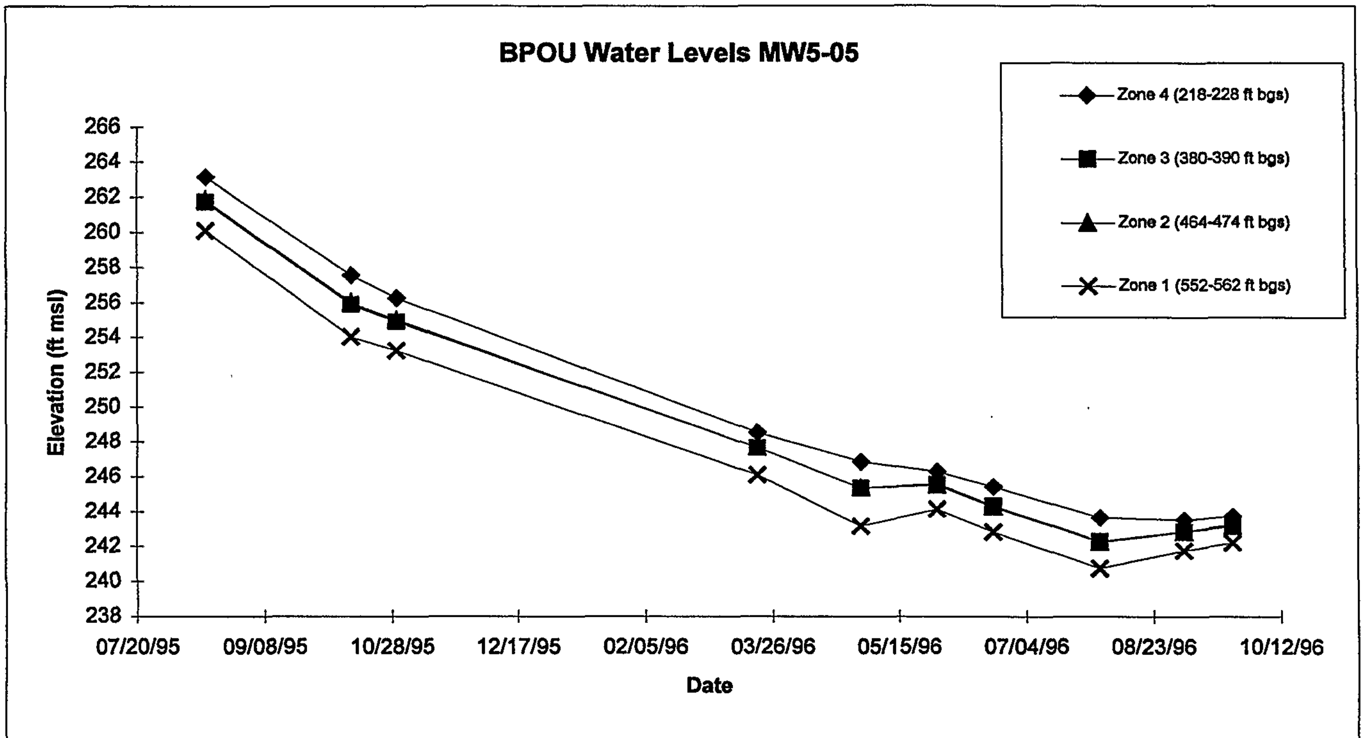
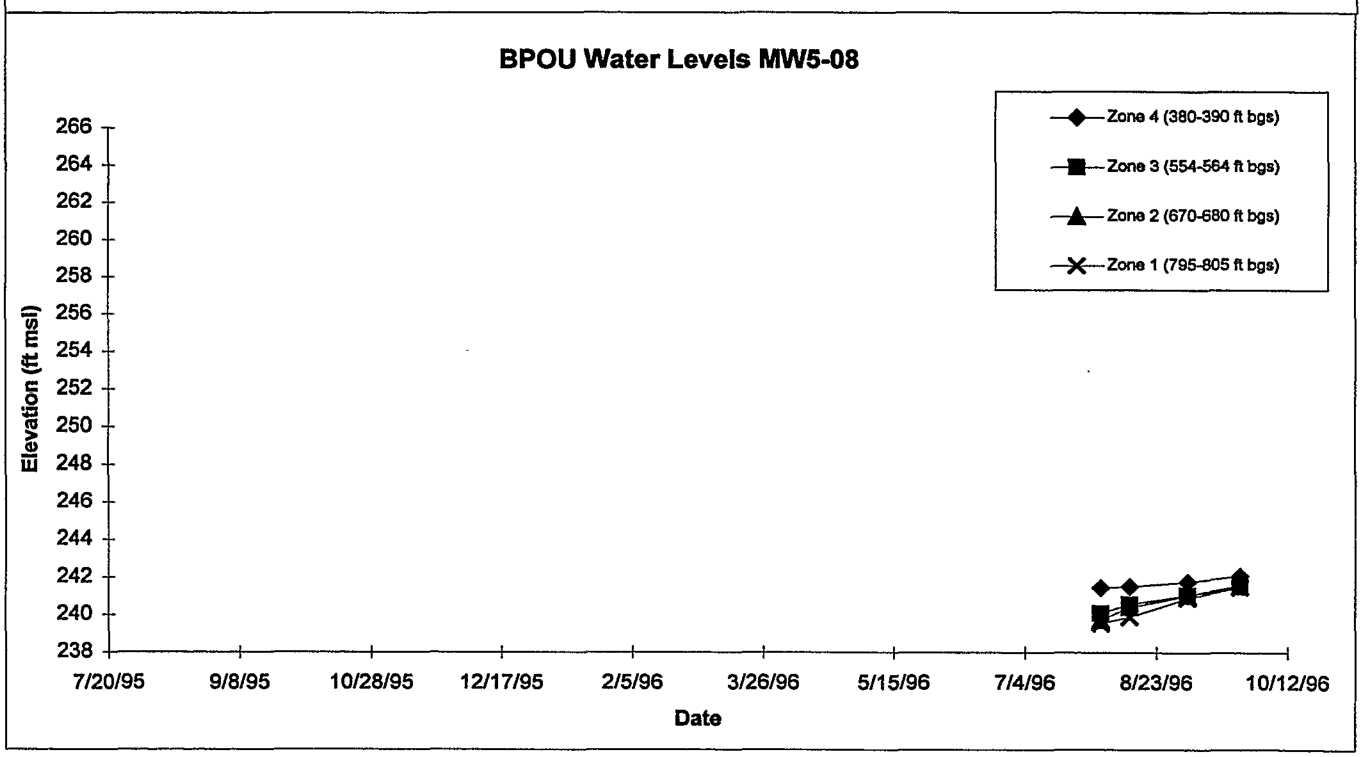
**Figure 4-39**
Baldwin Park Operable Unit Pre-Remedial Design
Groundwater Monitoring Well Hydrograph
MW5-05 and MW5-08




**CDM** Camp Dresser& McKee
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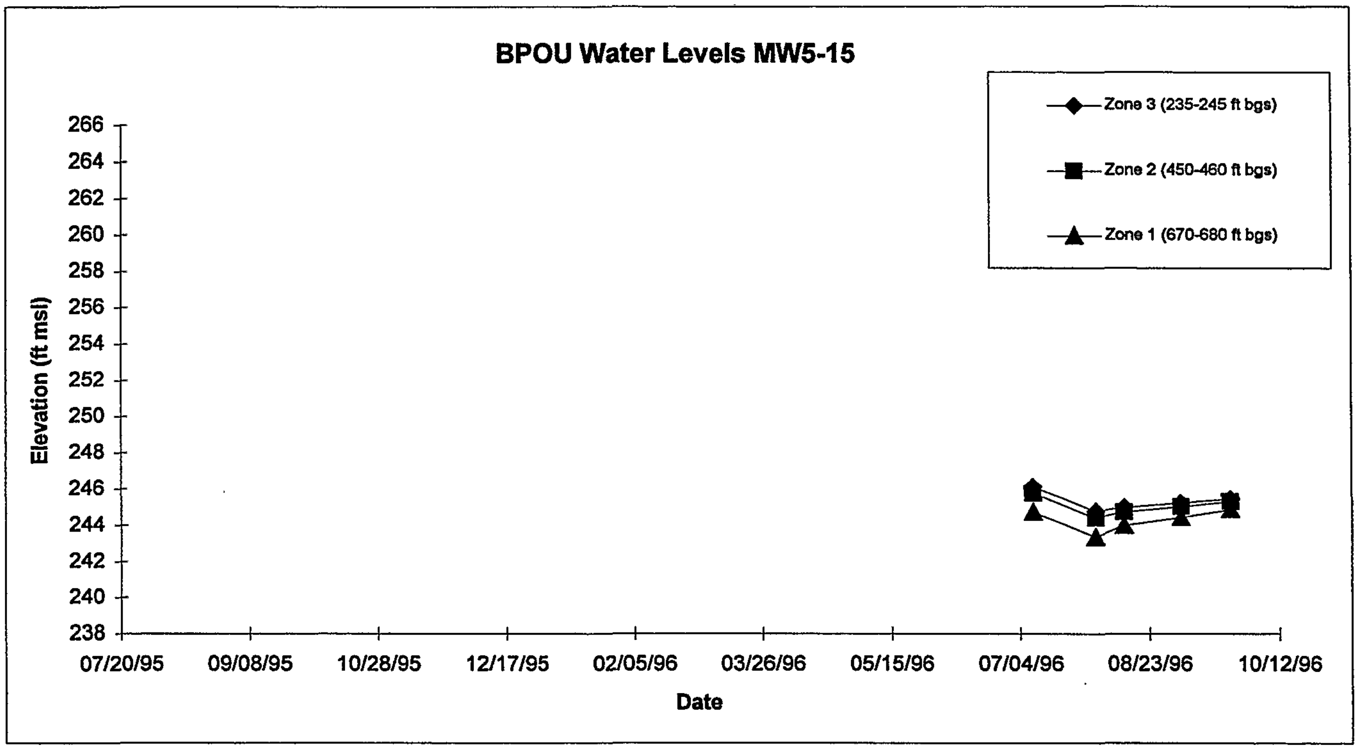
**Figure 4-40**
Baldwin Park Operable Unit Pre-Remedial Design
Groundwater Monitoring Well Hydrograph
MW5-15



MW5-03, MW5-05, MW5-11, and MW5-17, which were installed earlier in the project, exhibited the same temporal trends. Water levels decreased approximately 12 to 17 feet during the period from August 1995 through March 1996 at which time the water levels remained relatively stable (i.e. only fluctuating a maximum of 5 feet) during the period from March to September 1996.

## 4.2 Data Validation Results

Formal data validation was performed following the guidelines in USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA 1994), USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (EPA 1994), all applicable methods, and the project QAPP and SAP, on approximately 10 percent of the laboratory data generated during the groundwater monitoring program. Technical staff from CDM who were experienced in validation procedures performed the data review. The data validated were selected to obtain a review of all new data generated during the program and to provide an evaluation of all types of analytical results. For example, data packages were selected to include samples from both MP wells and water supply wells, from each quarterly sampling event, and from a wide variety of analyses. Analytical data obtained from well owners or from Watermaster were not validated. The project QAPP specified that if the 10 percent review indicated significant quality problems, that additional data validation would be subsequently performed. Significant quality problems were not encountered so additional validation was not performed.

A total of six CLP-like data packages were reviewed and validated, which corresponds to two data sets (approximately 10 percent) from each quarterly sampling event. Based on the data review, summary validation reports were prepared and submitted under separate cover to EPA, which presented the results of the validation. Summary validation reports from the eight data packages are included as Appendix D.

Data qualifiers resulting from validation were added to the electronic database, which was periodically updated and provided to EPA. Qualifiers were only applied to data that had been validated and followed the general format specified in Appendix G of the project SAP. Data were considered valid and acceptable except for those analytes that were qualified with a "J" (estimated), "U" (non-detects), "UJ" (non-detect with an estimated detection limit), or "R" (unusable). The "R" qualifier meant that the associated value was unusable. In other words, due to significant QC problems, the analysis was invalid and provided no information as to whether the compound was present or not. Results qualified with an "R" did not appear on data tables because they could be relied upon, even as a last resort. Results qualified with a "J" were estimated; however, this did not necessarily indicate that the data were unusable.

## 4.3 Aquifer Testing Results

Data from the pumping tests conducted in the BPOU were analyzed to develop estimates of aquifer hydraulic properties in the region. These pumping tests address the ROD requirements of obtaining ancillary data, including hydraulic conductivity measurements and measurements of other aquifer properties. These data assist in the accurate determinations of groundwater flow, and in evaluating the effectiveness of the proposed remedial actions.

Data were analyzed by applying analytical methods based on Theis assumptions to estimate transmissivity and hydraulic conductivity values. Aquifer storage properties were also estimated. Data were taken using manual water level readings and a Hermit data logger with a pressure transducer for automated readings. Pumping rates were measured using a flow totalizer. Pumping test data are included on diskettes in Appendix E.

### *4.3.1 Arrow Well*

A 72 hour constant rate discharge test was conducted at the Arrow Well, 1900034, which is screened from 300 to 524 feet bgs. The Lante Well, 8000060, which is screened from 275 to 577 feet bgs was used as an observation well. The Lante Well is located approximately 100 feet from the Arrow Well.

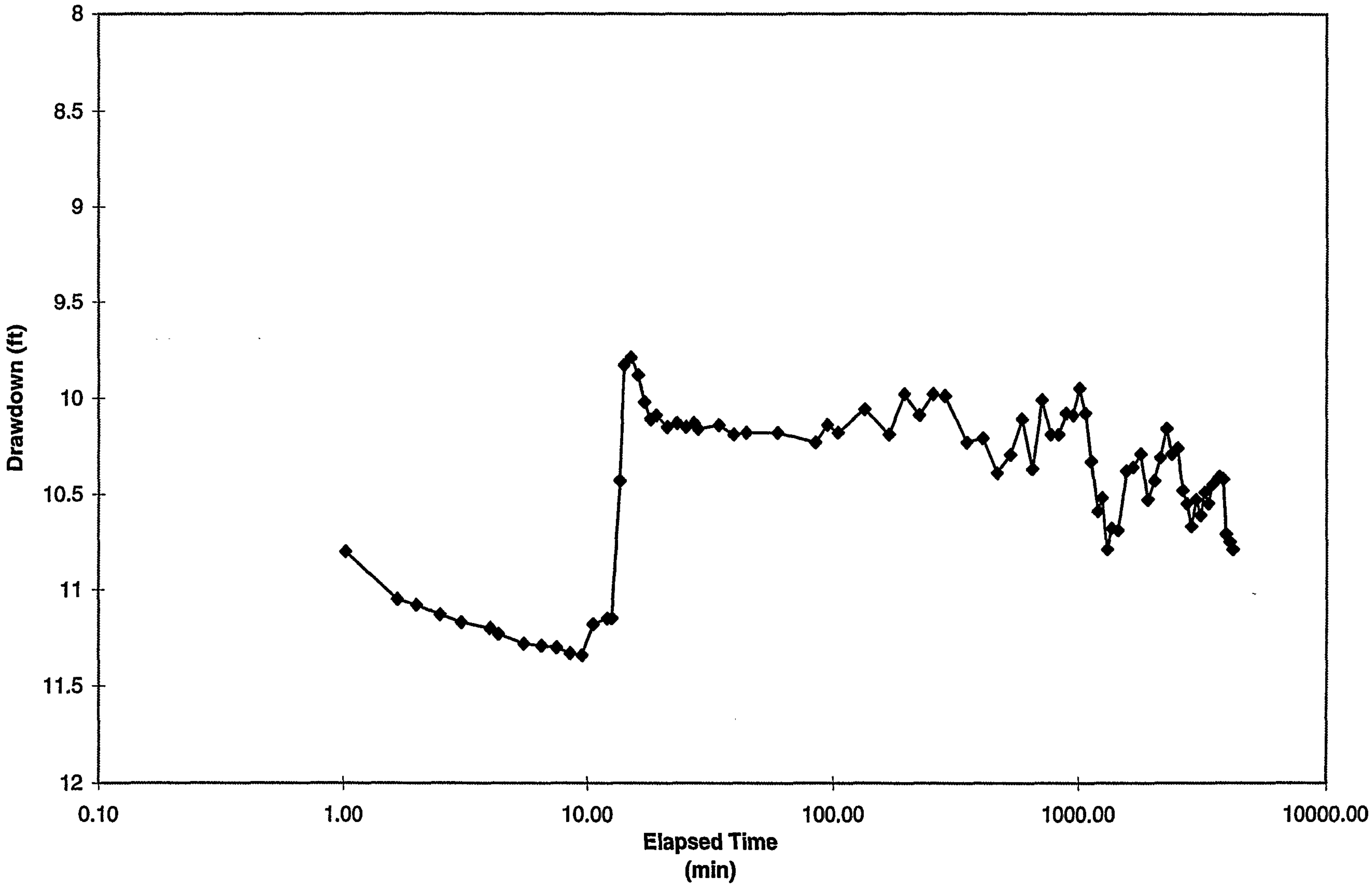
As shown on Figure 4-41, after approximately 10 minutes of pumping the drawdown decreased rapidly. This was a result of an abrupt change in pumping rate due to a change in discharge conditions. The well pumped initially into a reservoir. Once the reservoir was full the well started pumping into the distribution system. The change in pressure caused the pumping rate to change. For the remainder of the test, the discharge rate varied a maximum of 5 percent which probably was a result of changes in demands on the distribution system. The average rate during the test was 3,425 gpm.

Semi-log plots of the drawdown data at the Arrow and Lante wells are shown in Figures 4-41 and 4-42. Because of the fluctuations in the pumping rate, the data at the Arrow pumping well were not analyzed.

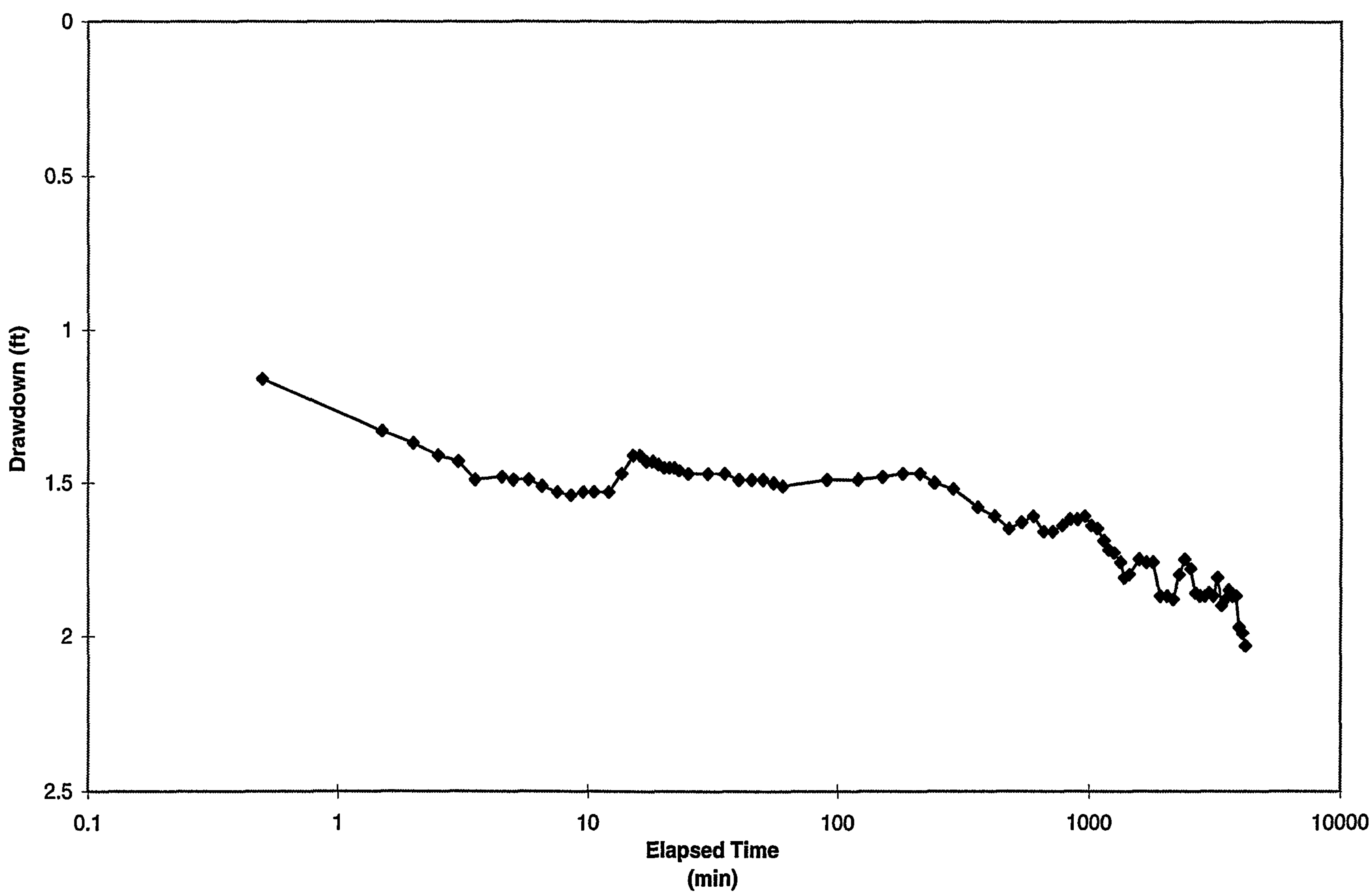
The drawdown data at the Lante observation well were analyzed using a Cooper-Jacob approach. Fluctuations apparent in the pumping well data are somewhat damped out at the observation well, and the observation well data plots in a fairly straight line. Analysis of the later time data yields an estimate of transmissivity of 323,672 $ft^2$/day. The saturated thickness of the aquifer at the Lante well is approximately 1,100 feet which yields an estimate of hydraulic conductivity of 300 ft/day, assuming the entire thickness of the aquifer contributes flow to the well. The estimated storage coefficient is 0.0014. This value is consistent with the response of a confined aquifer, indicating some degree of isolation from the water table of the portion of the aquifer stressed and monitored during this test.

Analysis of the recovery data at the pumping and observation wells also follows a Cooper-Jacob method (Figures 4-43 and 4-44). Just as the time-drawdown curve for the pumping period of a test will form a straight line when plotted on a semi-logarithmic diagram, the same simplification also applies to the recovery period of a test. Residual drawdown, the static water level minus the observed water level after pumping has stopped, plotted versus $t/t'$, the ratio of the time since pumping started, $t$, to the time since pumping stopped, $t'$, will also plot in a straight line. The analysis at the two wells yields estimates of transmissivity of 299,480 and 598,960 $ft^2$/day, producing estimates of hydraulic conductivity from 270 to 550 ft/day. Recovery data at the pumping well shows an initial inertial recovery above the static water level. This response may also have been transmitted to the observation well. Therefore, the analysis is performed on the data subsequent to this response.

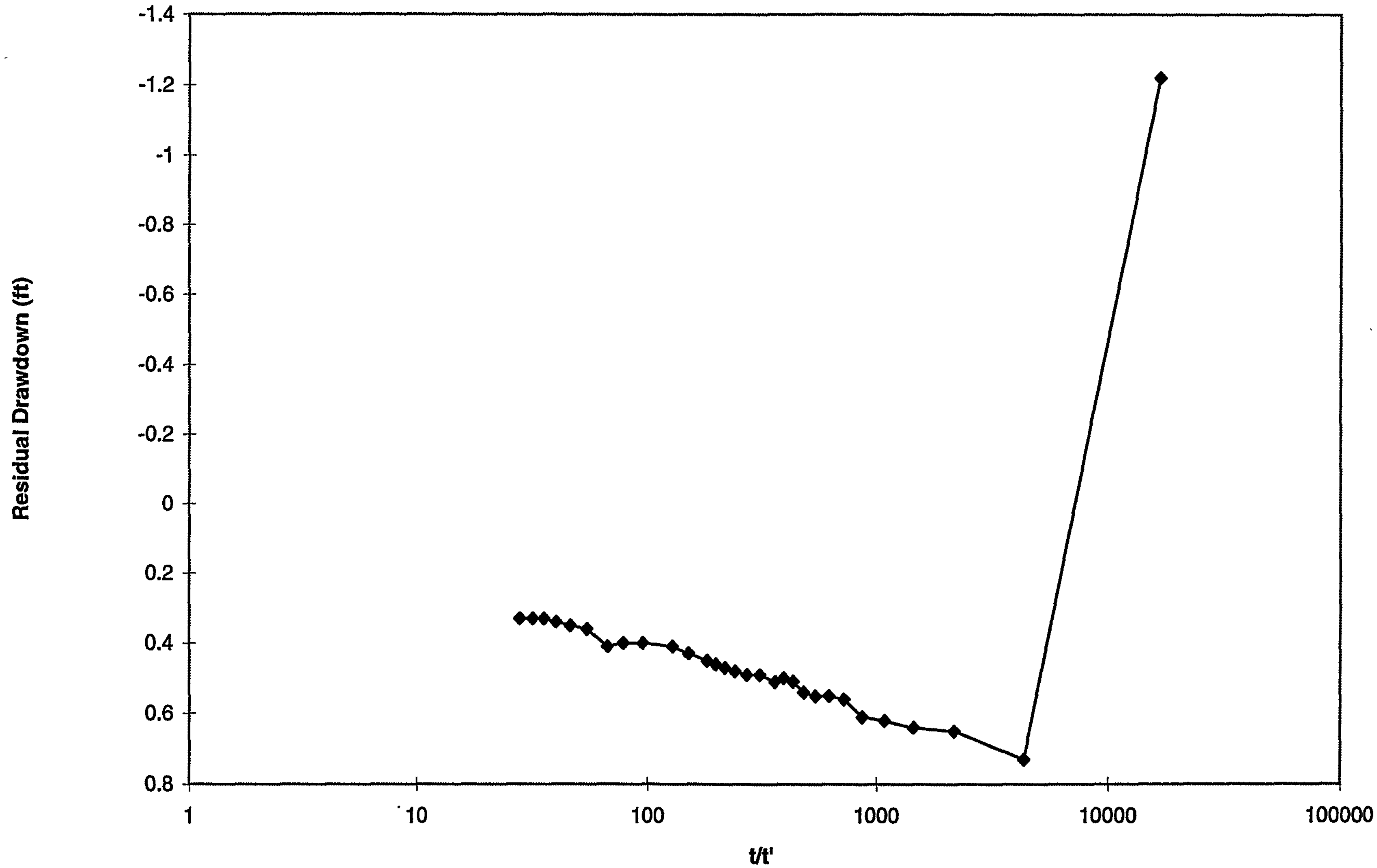
## 72 Hour Constant Rate Discharge - Drawdown in Arrow Pumping Well

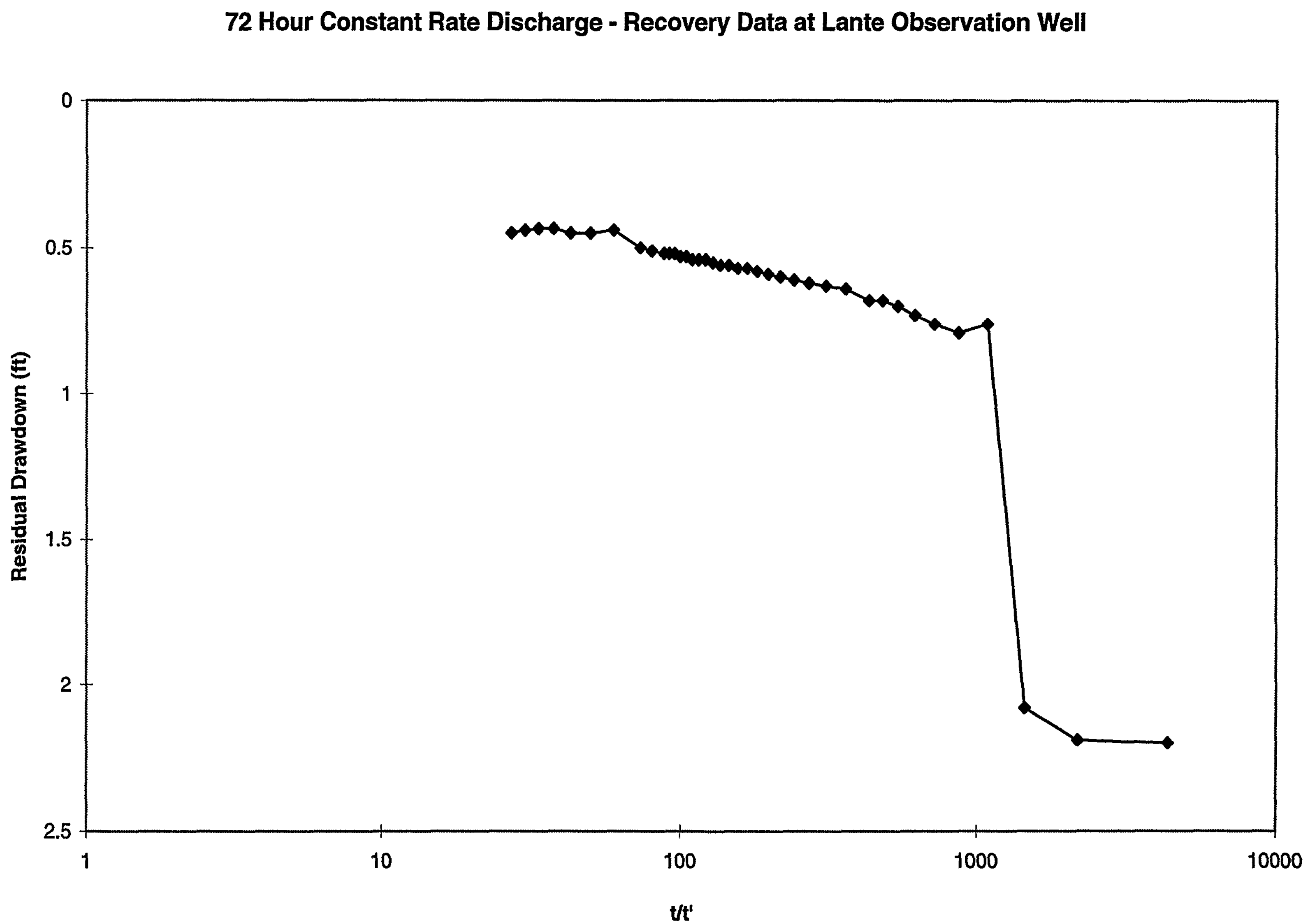


72 Hour Constant Rate Discharge - Drawdown in Lante Observation Well



72 Hour Constant Rate Discharge - Recovery Data at Arrow Pumping Well




72 Hour Constant Rate Discharge - Recovery Data at Lante Observation Well
Residual Drawdown (ft)
0
0.5
1
1.5
2
2.5
1
10
100
1000
10000
t/t'

After the pumping well had been allowed to recover, a 35 minute pumping test was conducted at the Arrow Well while the well pumped only into the reservoir. The pumping test was restarted in an effort to capture the initial drawdown in the well, which responds in a matter of seconds to the initiation of pumping. A semi-log plot of the drawdown data at the Arrow pumping well indicates these data were again not amenable to analysis (see Figure 4-45).

A semi-log plot of the drawdown response at the observation well can be analyzed using the Cooper-Jacob method. The plot shown in Figure 4-46 does not plot in a straight line, thereby not conforming to the assumptions of this analysis. The plots of recovery data at both the pumping well and the observation well, in Figures 4-47 and 4-48, again show a large initial inertial response. Estimates of transmissivity from the recovery data range from 434,900 to 652,337 $ft^2$/day.

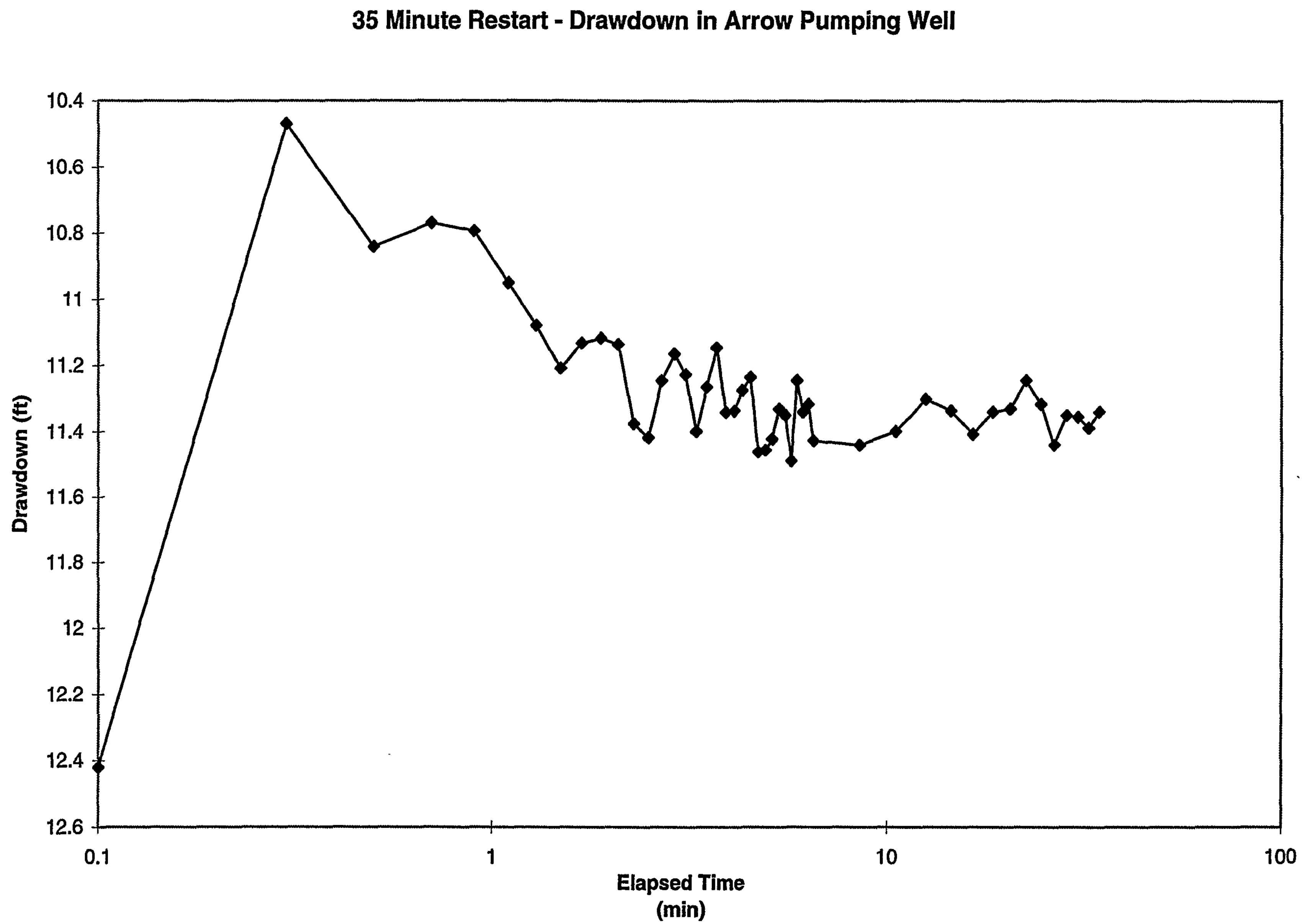
In summary, for both of these tests, the 72 hour constant rate discharge and the 35 minute restart, the most reliable data appears to come from the recovery phase of the tests. Drawdown data taken during the pumping phase of the tests are erratic, possibly impacted by pumping rate changes resulting from changing distribution system demands, and exhibit only relatively small changes in incremental drawdown after the initial drawdown response, therefore limiting their usefulness in estimating aquifer hydraulic properties. The more reliable estimates of transmissivity range from 300,000 to 650,000 $ft^2$/day, and based upon an aquifer saturated thickness of 1,100 feet lead to estimates of hydraulic conductivity of 270 to 590 ft/day.

### *4.3.2 Santa Fe Well #1*

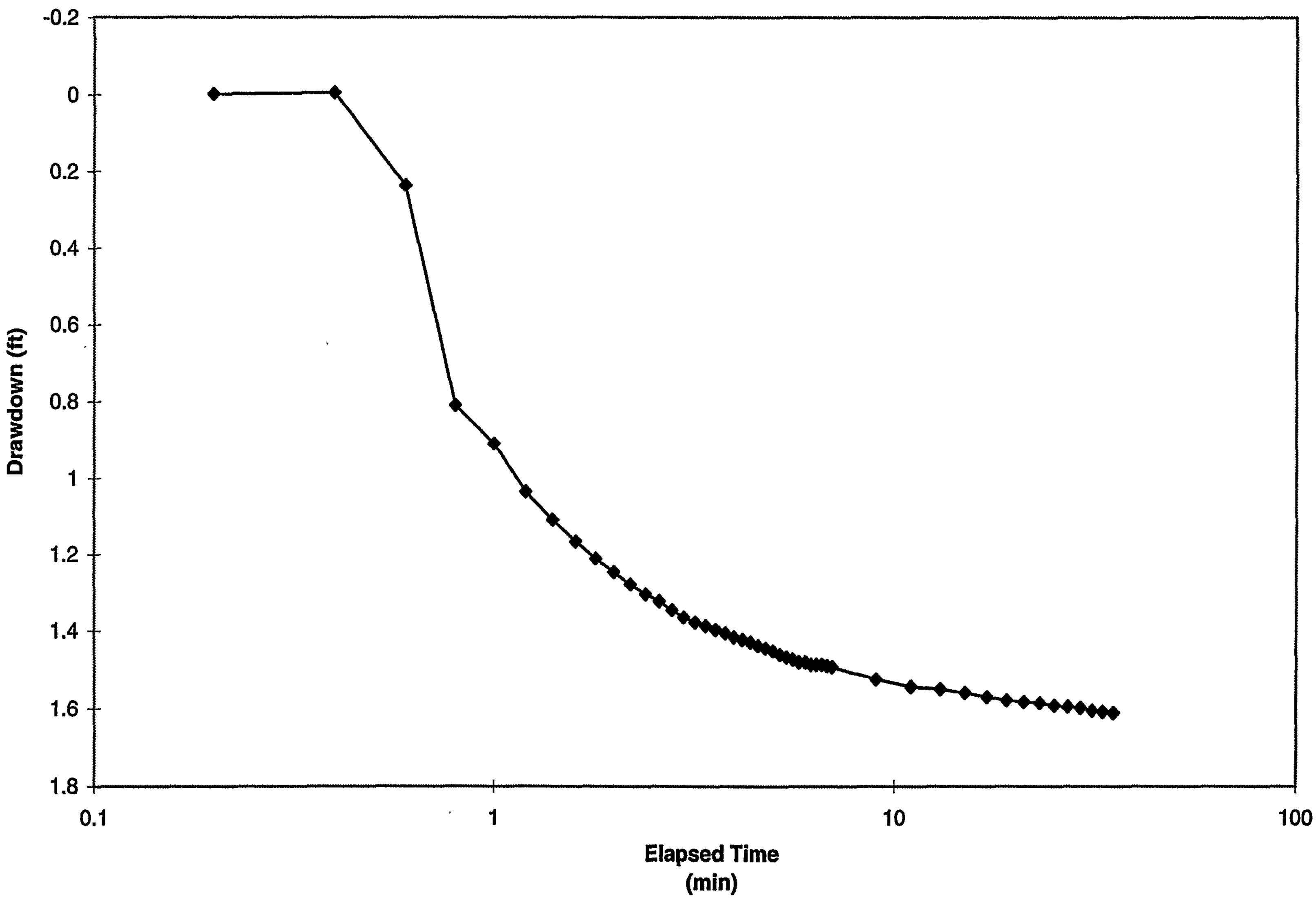
A step-drawdown test, followed by a 72 hour constant rate discharge test was conducted at Santa Fe Well #1, 8000070, which is screened from 290 to 435 feet bgs. Osco MW-4, W110SMW4, was used as an observation well. It is screened from 230 to 310 feet bgs, and is located approximately 1600 feet from Sante Fe #1. The step test consisted of 3 one-hour pumping periods, at rates of approximately 1400, 1900, and 2600 gpm, respectively, followed by 30 minute recovery periods. After the third recovery a 72 hour constant rate discharge test was conducted.

A semi-log plot of the drawdown data at the Santa Fe pumping well (see Figure 4-49) produces an estimate of transmissivity of 158,548 $ft^2$/day. A semi-log plot of the drawdown data at the Osco MW-4 observation well oscillates up and down, as shown in Figure 4-50. Another well cycling on and off may be influencing the water level at this well. Using a Cooper-Jacob method, estimates of transmissivity and the storage coefficient are 172,961 $ft^2$/day and 0.063. However, the distance to the observation well and the duration of the test may be outside the accepted ranges for these parameters, for the straight-line analysis.

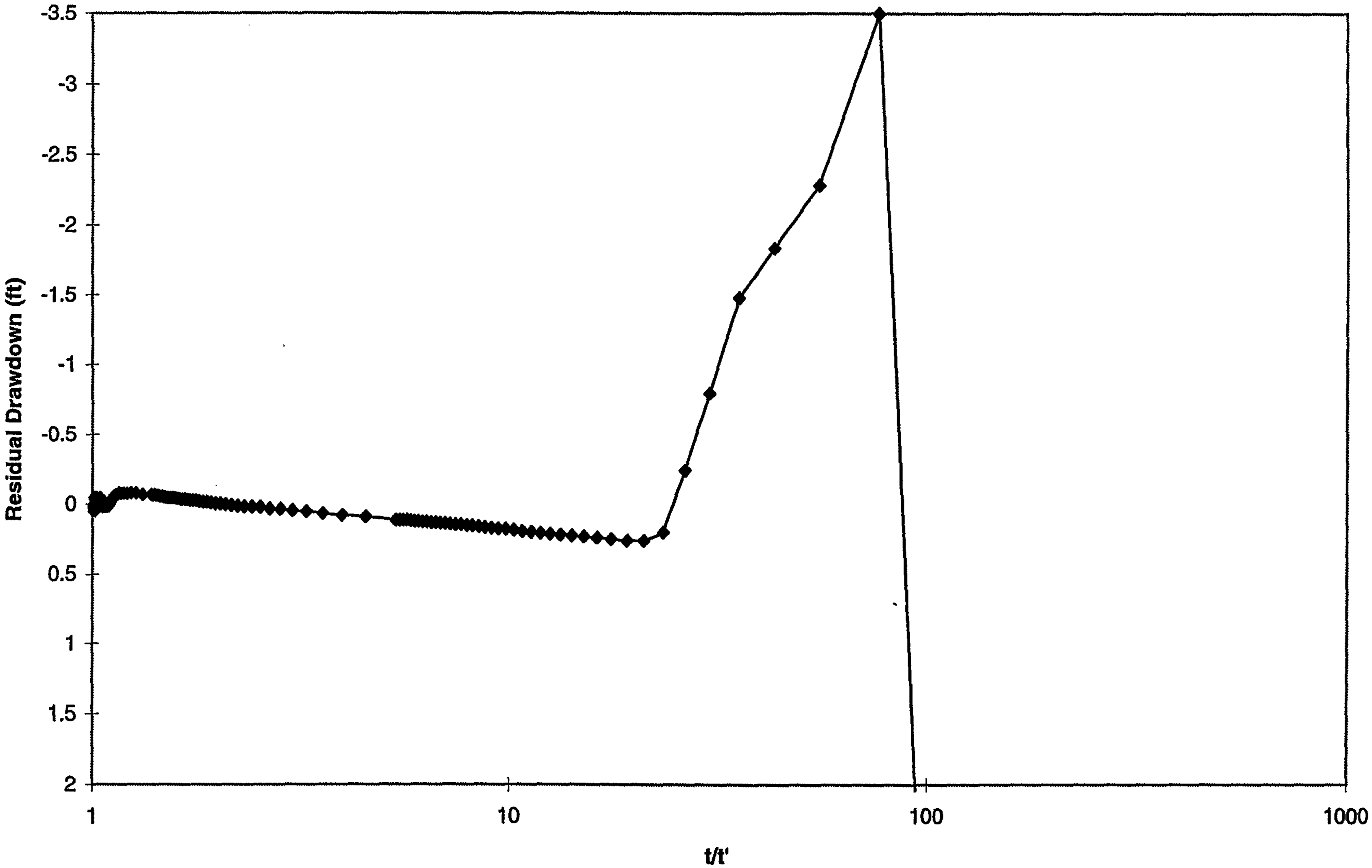
The recovery data at the pumping well yield an estimate of transmissivity of 136,195 $ft^2$/day after an initial inertial response (Figure 4-51). The recovery data measured at the observation well are very erratic, and cannot be analyzed using the Cooper-Jacob method (Figure 4-52). Based upon the transmissivity estimates at the Santa Fe pumping well, and a saturated aquifer thickness of approximately 760 feet in this area, hydraulic conductivity estimates range from 180 to 230 ft/day.


35 Minute Restart - Drawdown in Arrow Pumping Well
Drawdown (ft)
10.4
10.6
10.8
11
11.2
11.4
11.6
11.8
12
12.2
12.4
12.6
0.1
1
10
100
Elapsed Time
(min)

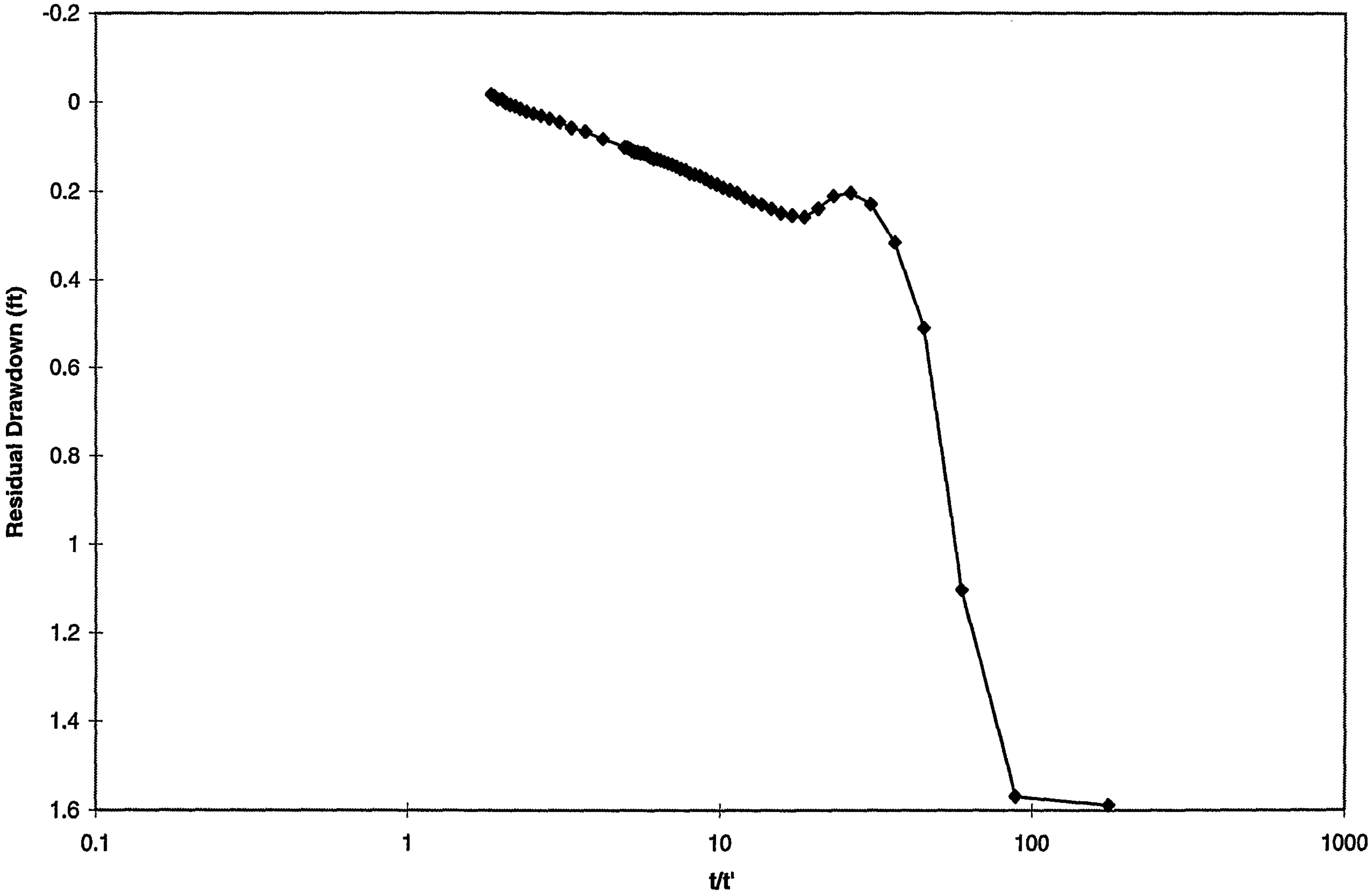
35 Minute Restart - Drawdown in Lante Observation Well

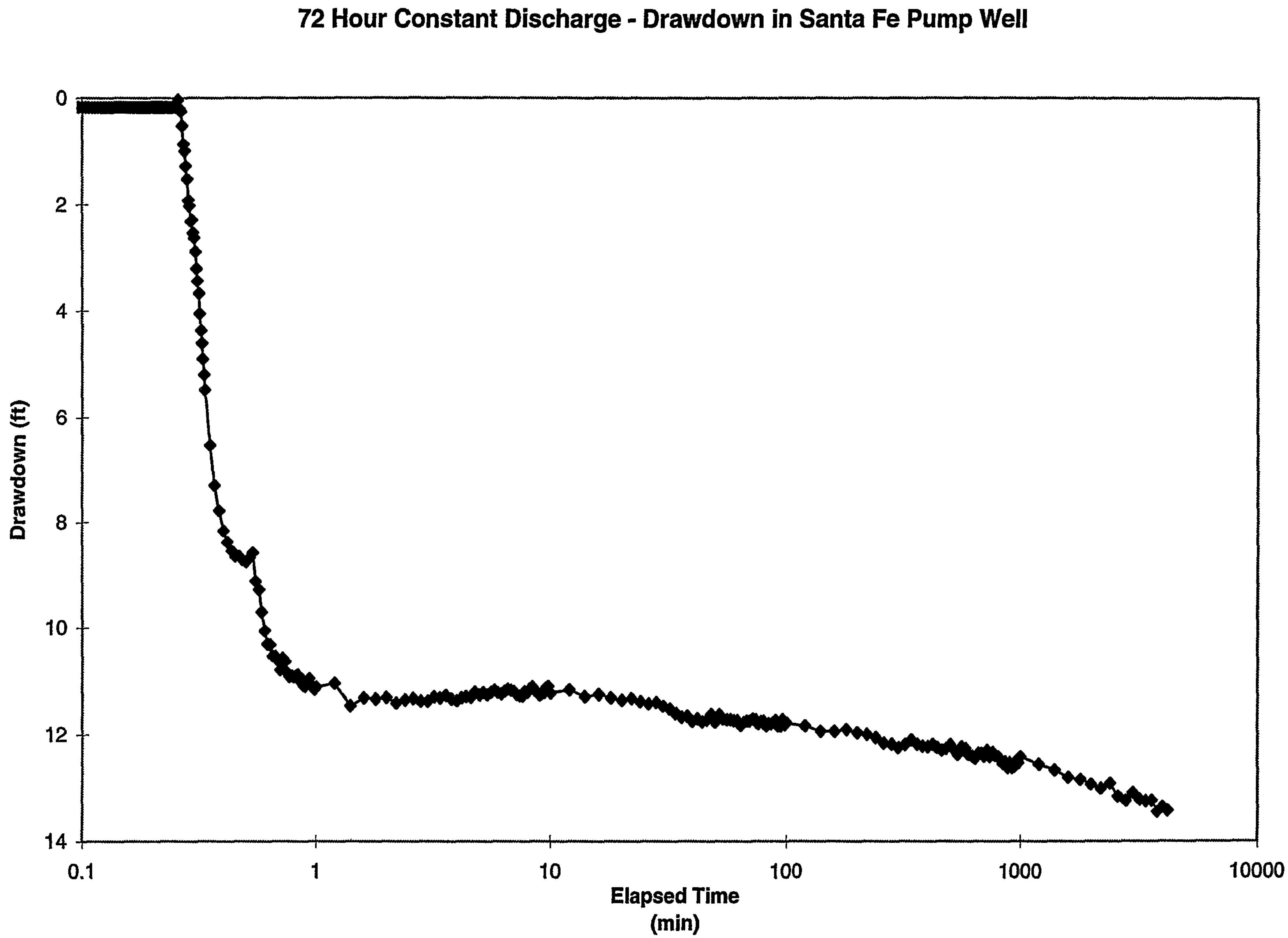


## 35 Minute Restart - Recovery Data at Arrow Pumping Well



## 35 Minute Restart - Recovery Data at Lante Observation Well

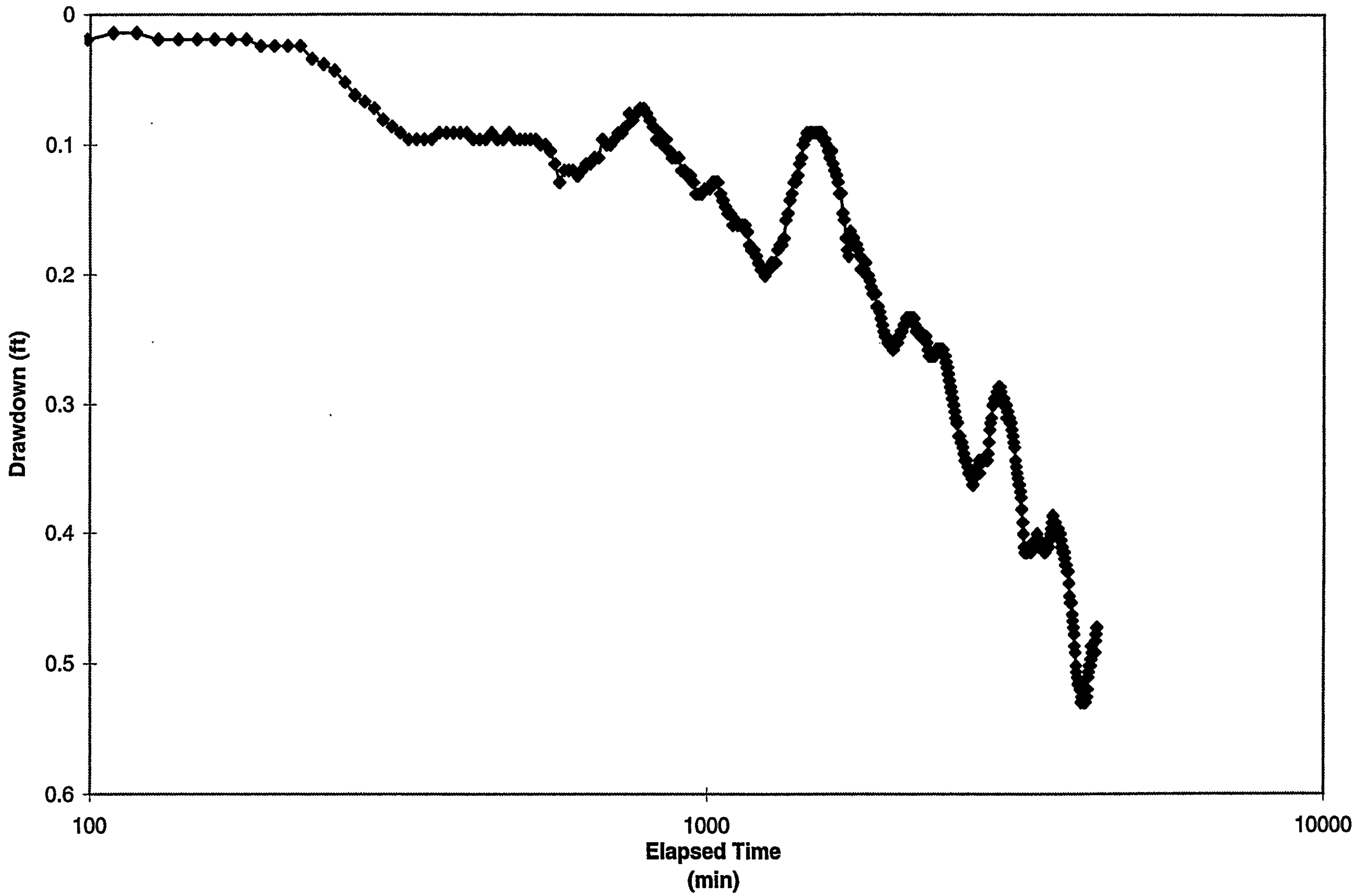




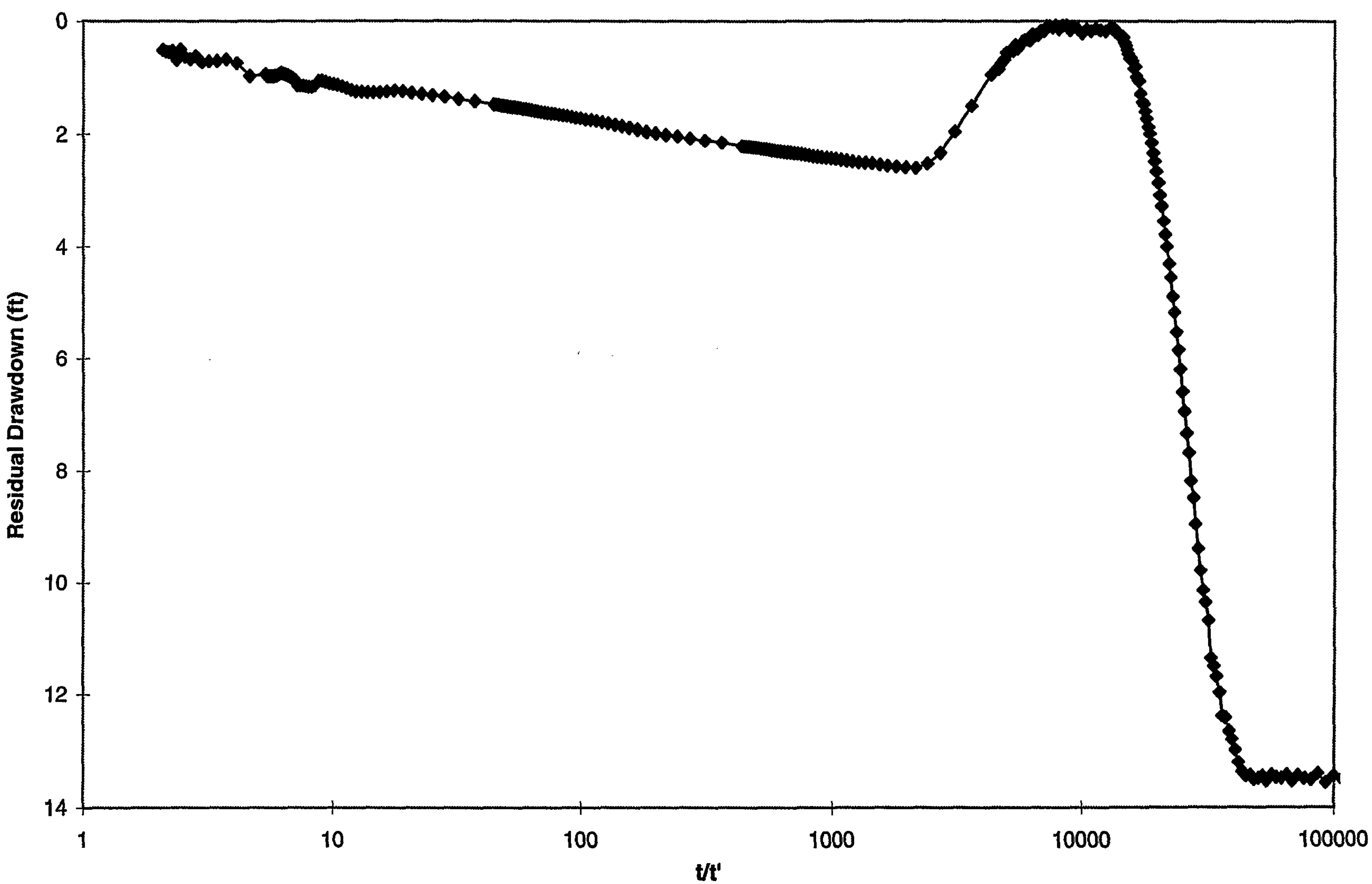

**CDM** Camp Dresser & McKee

Figure 4 -49

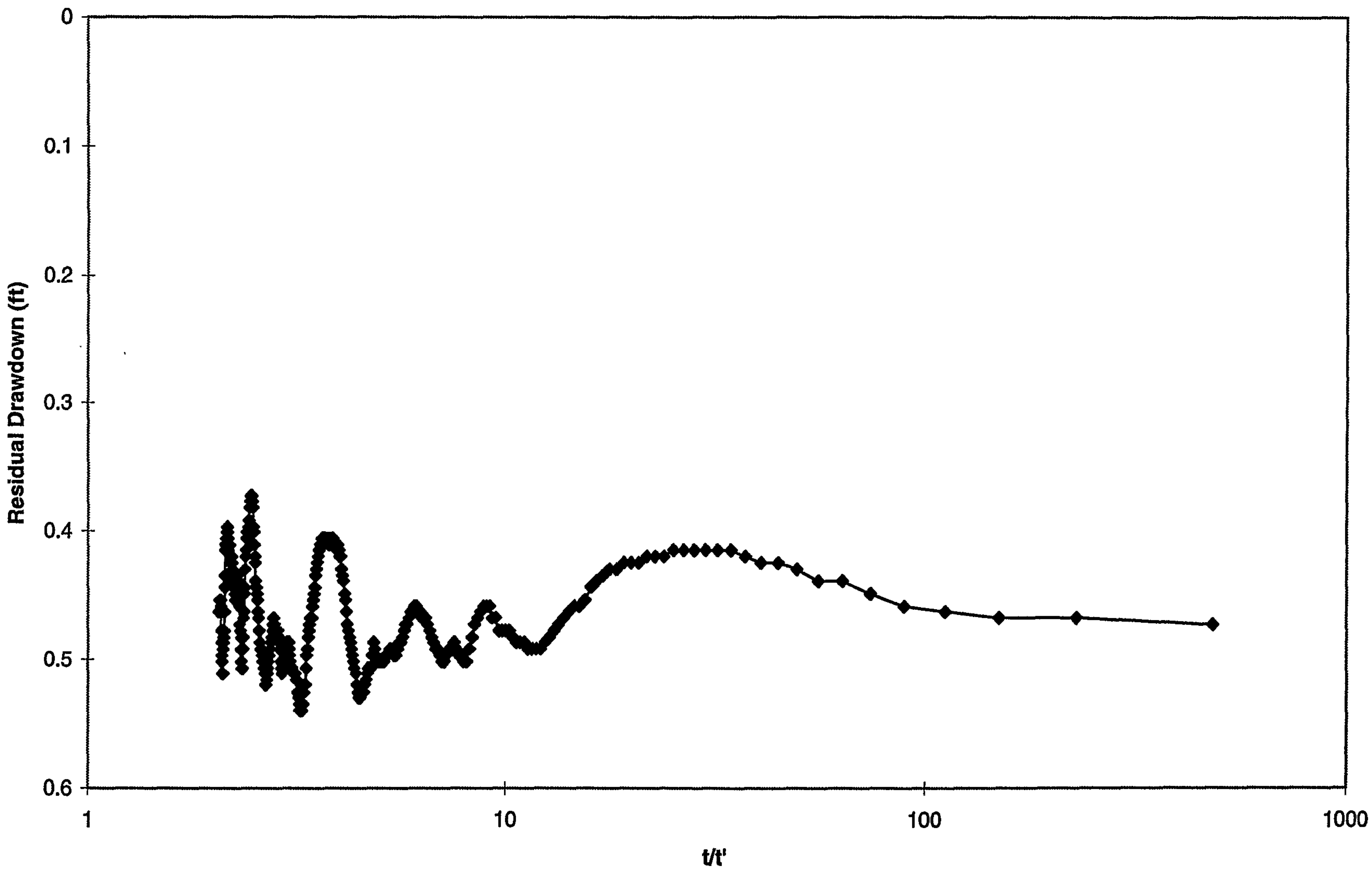
## 72 Hour Constant Discharge - Drawdown in Osco MW-4



## 72 Hour Constant Rate Discharge - Recovery Data at Santa Fe Pump Well



## 72 Hour Constant Discharge - Recovery Data at Ocso MW-4



### *4.3.3 AZ-2 Well*

Three shorter duration tests were conducted at well AZ-2, 11900038, which is screened from 350 to 614 feet bgs. Each pumping test was run for approximately 11 hours with pumping at a rate of 1,700 gpm. The well was allowed to recover overnight following each test. Drawdown and recovery data were recorded at both the pumping well and at the observation well, ALR/TMC MW-10, which is screened from 282 to 482 feet bgs, and is located approximately 1300 feet from the pumping well.

Using the later time portion of the drawdown curve at the pumping well (see Figures 4-53 through 4-55), estimates of transmissivity are 409,000, 470,000 and 514,000 $ft^2$/day, respectively. The recovery data at the AZ-2 pumping well for the three tests yield estimates of transmissivity ranging from 510,000 and 810,000 $ft^2$/day (see Figures 4-56 through 4-58).

The estimates of transmissivity from the MW-10 observation well drawdown and recovery data range from 700,000 to 900,000 $ft^2$/day. The drawdown data from the observation well demonstrates an odd behavior at the end of each of the three tests. The slope of the drawdown curve shifts dramatically during the latter portion of the test, as seen in Figures 4-59 through 4-61. This may be indicative of a boundary effect of an impervious boundary. Estimates of the storage coefficient from the observation well data are approximately 0.001.

Based upon the estimates of transmissivity from the pumping well data, and a saturated thickness of approximately 700 feet at this point in the aquifer, hydraulic conductivity is estimated at 590 to 800 ft/day.

### *4.3.4 Big Dalton Well*

A step-drawdown test was performed at the Big Dalton well, 1900035, which is screened from 254 to 587 feet bgs. The step-drawdown tests consisted of 4 steps, each lasting 2 hours. The pumping rates for each of the steps were 750, 1,500, 2,250 and 3,040 gpm, respectively. There was no recovery period between the steps. Recovery data was collected for a period of 15 hours, after the final step was completed.

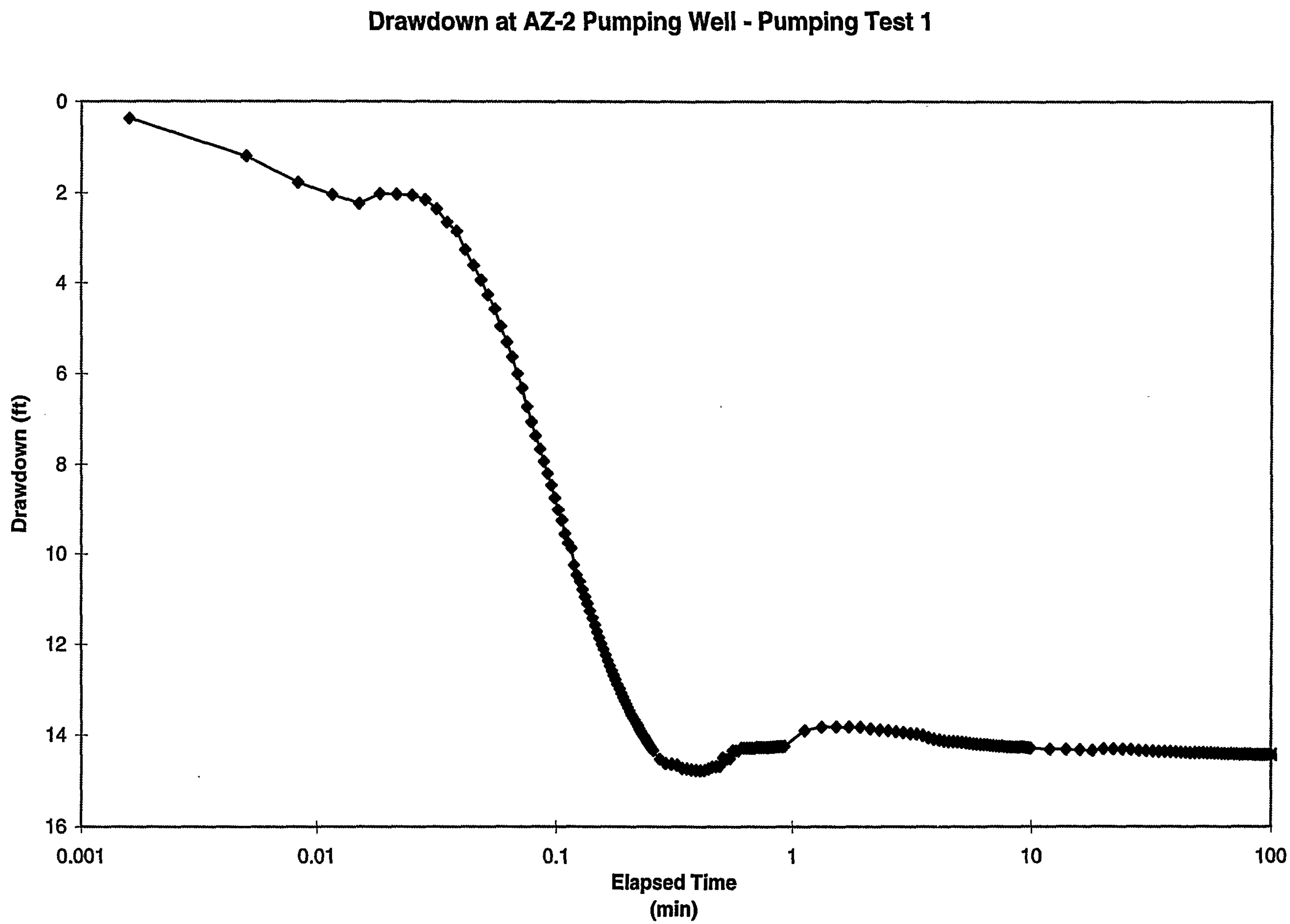
The specific capacity of the well can be calculated by dividing the pumping rate by the drawdown. An approximate transmissivity can then be estimated using the formula:

T = SC*2000 (Driscoll, 1986)

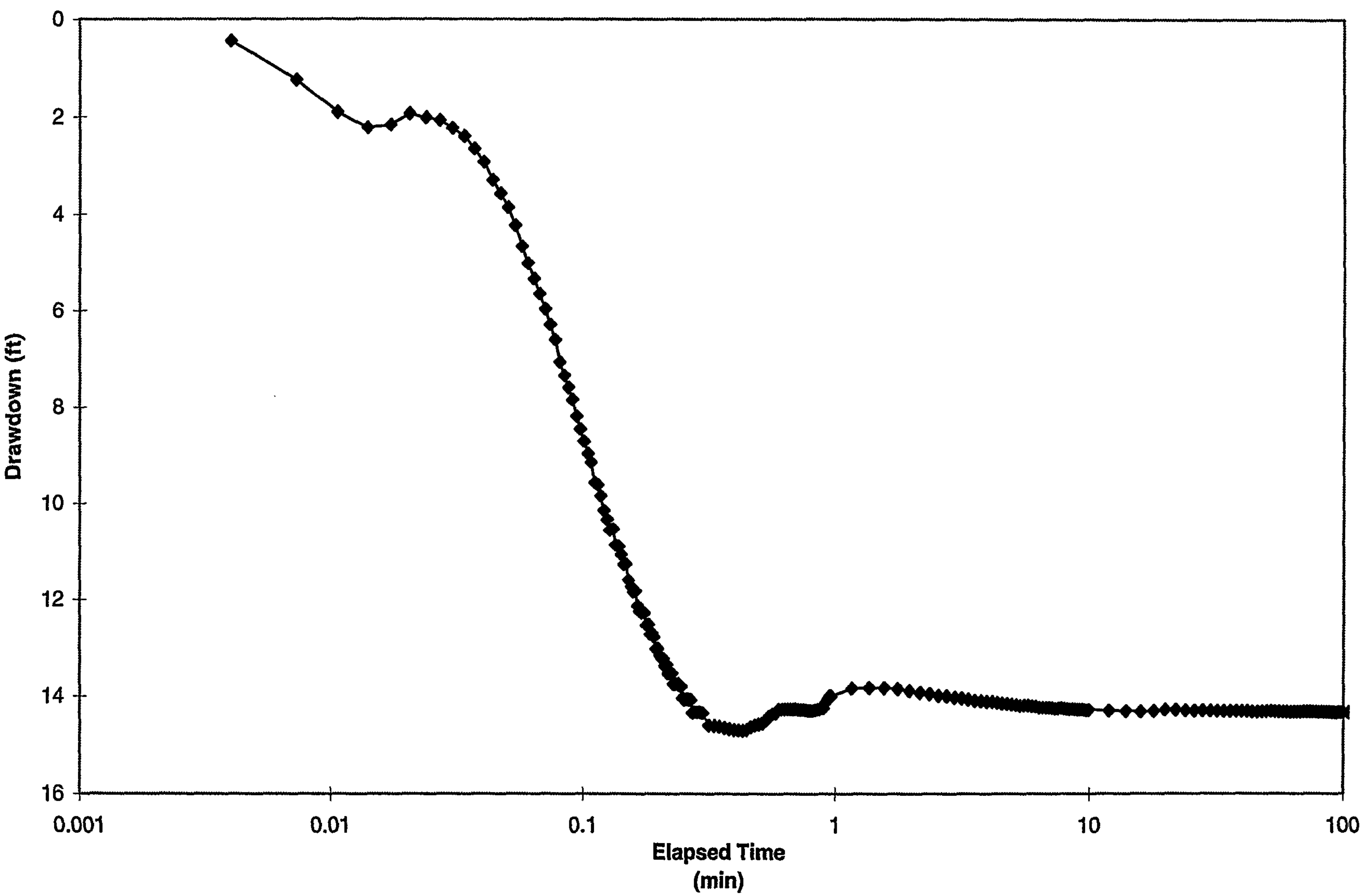
where,

T = transmissivity (gpd/ft), and
SC = Specific Capacity (gpm/ft)

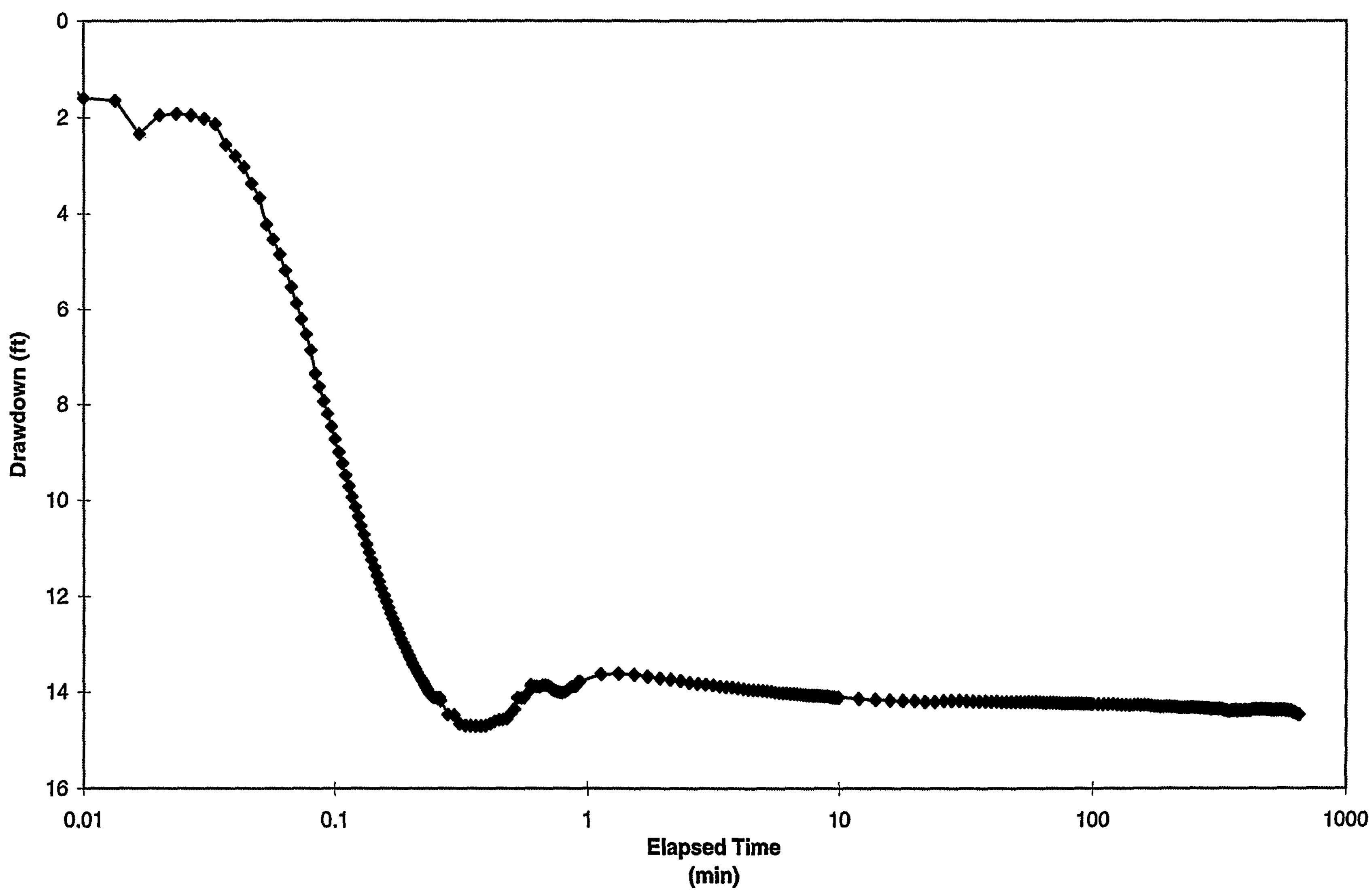
This calculation ignores well diameter, well efficiency, and pumping duration, as well as specific local aquifer conditions because it is developed based upon generalized aquifer conditions.


Drawdown at AZ-2 Pumping Well - Pumping Test 1
0
2
4
6
8
10
12
14
16
Drawdown (ft)
0.001
0.01
0.1
1
10
100
Elapsed Time
(min)

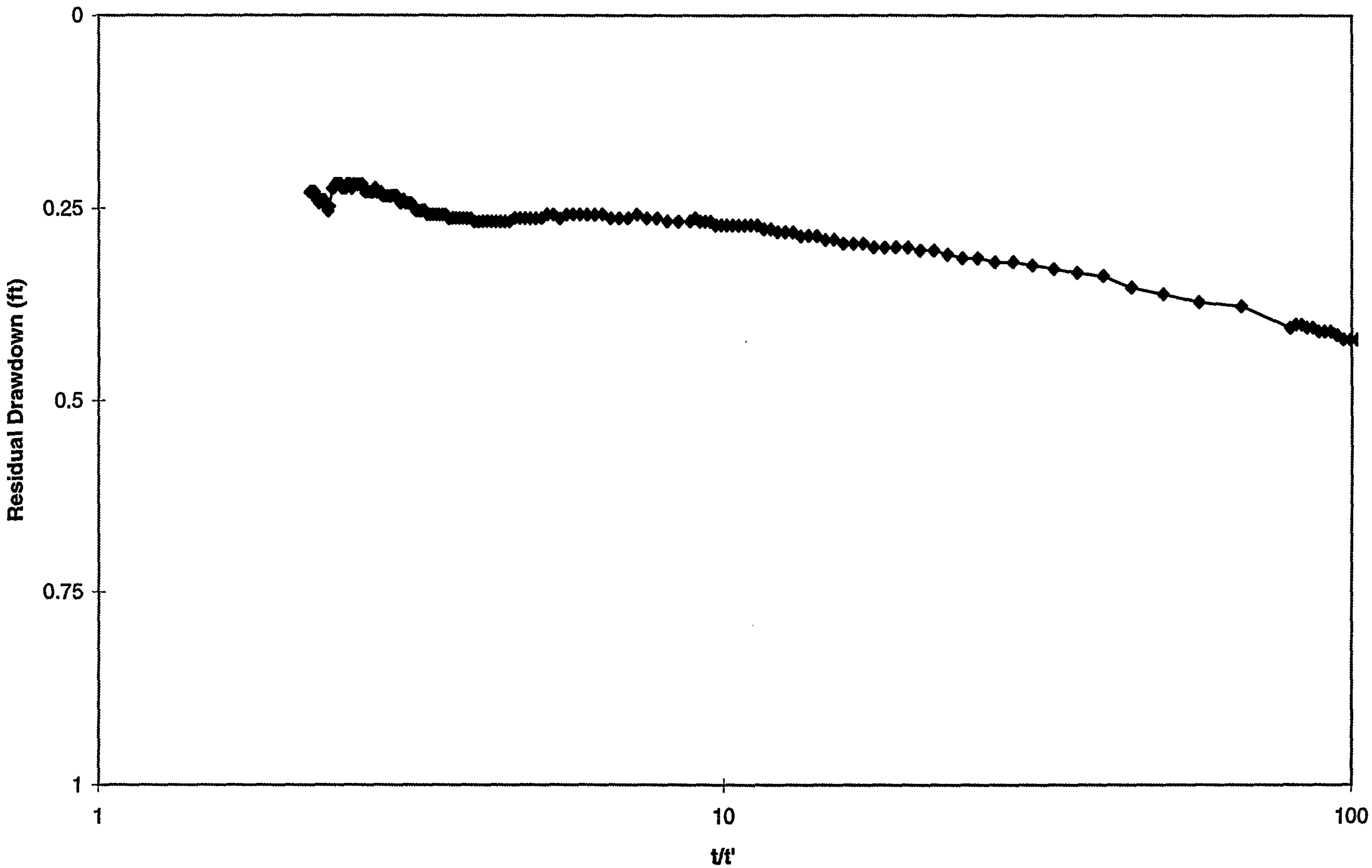
## Drawdown at Pumping Well AZ-2 - Pumping Test 2



## Drawdown at AZ-2 Pumping Well - Pumping Test 3



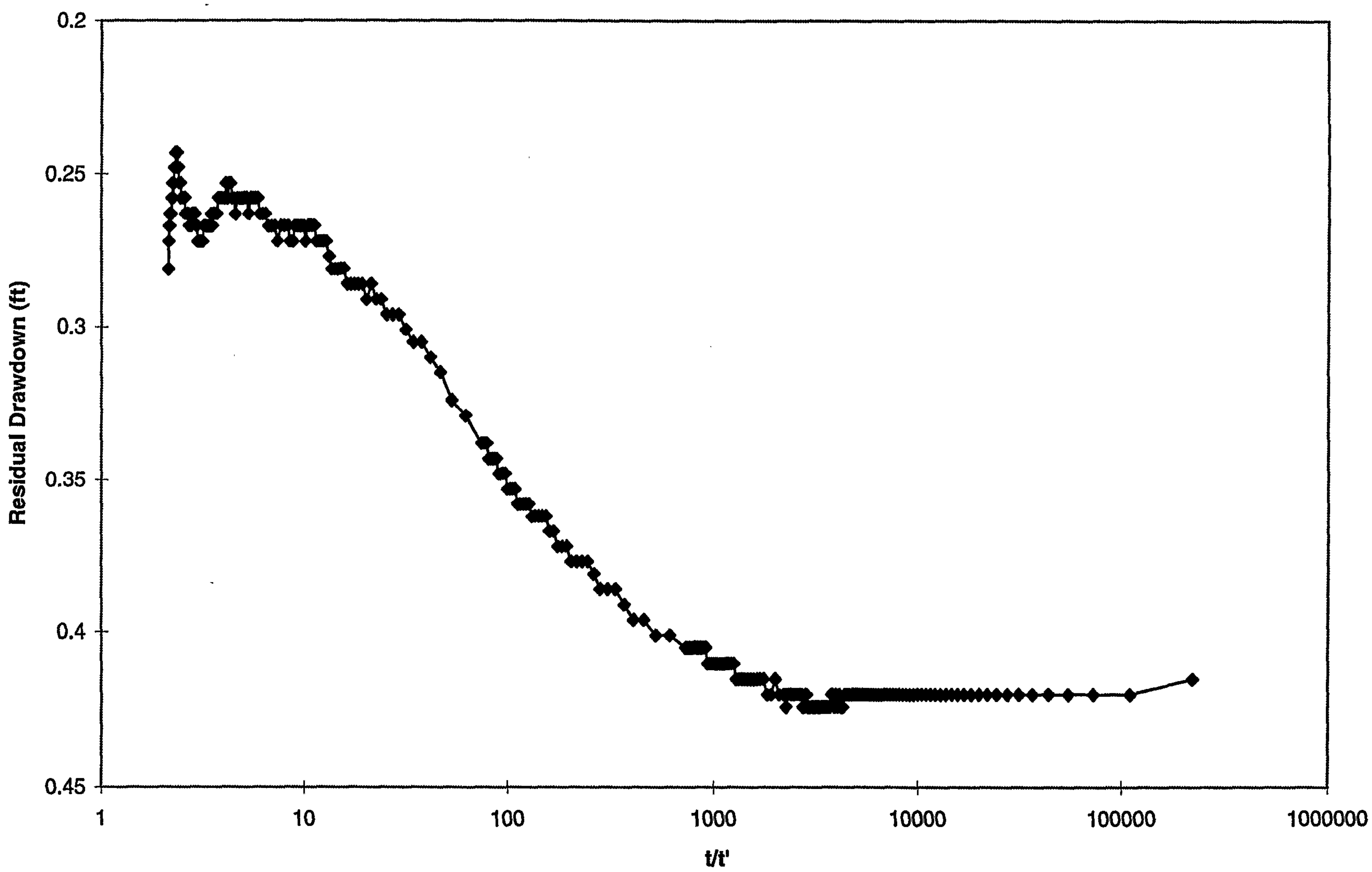
## Recovery Data at Pumping Well AZ-2 - Pumping Test 1



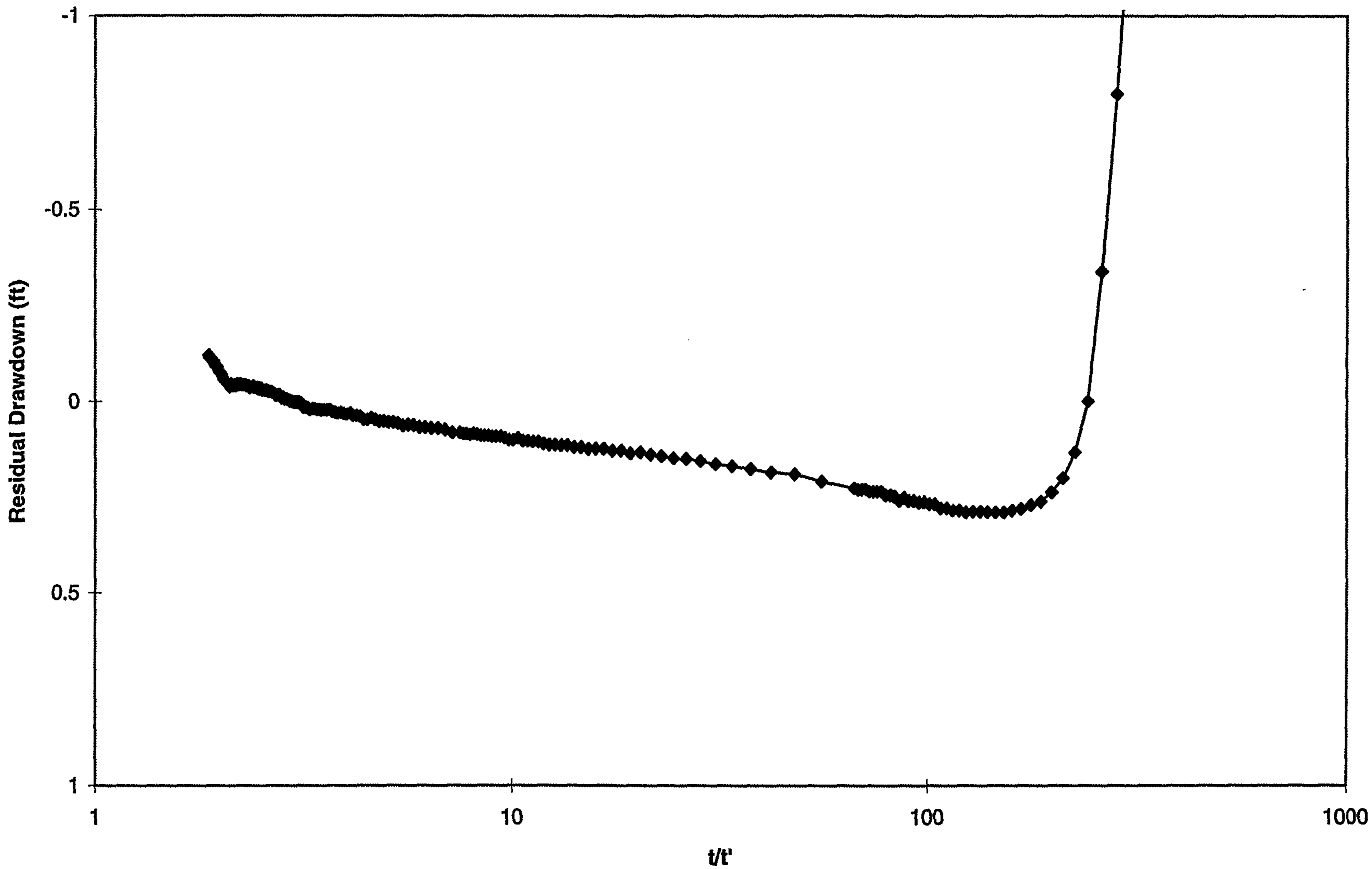

**CDM** Camp Dresser & McKee

**Figure 4 -56**

Recovery Data at Pumping Well AZ-2 - Pumping Test 2

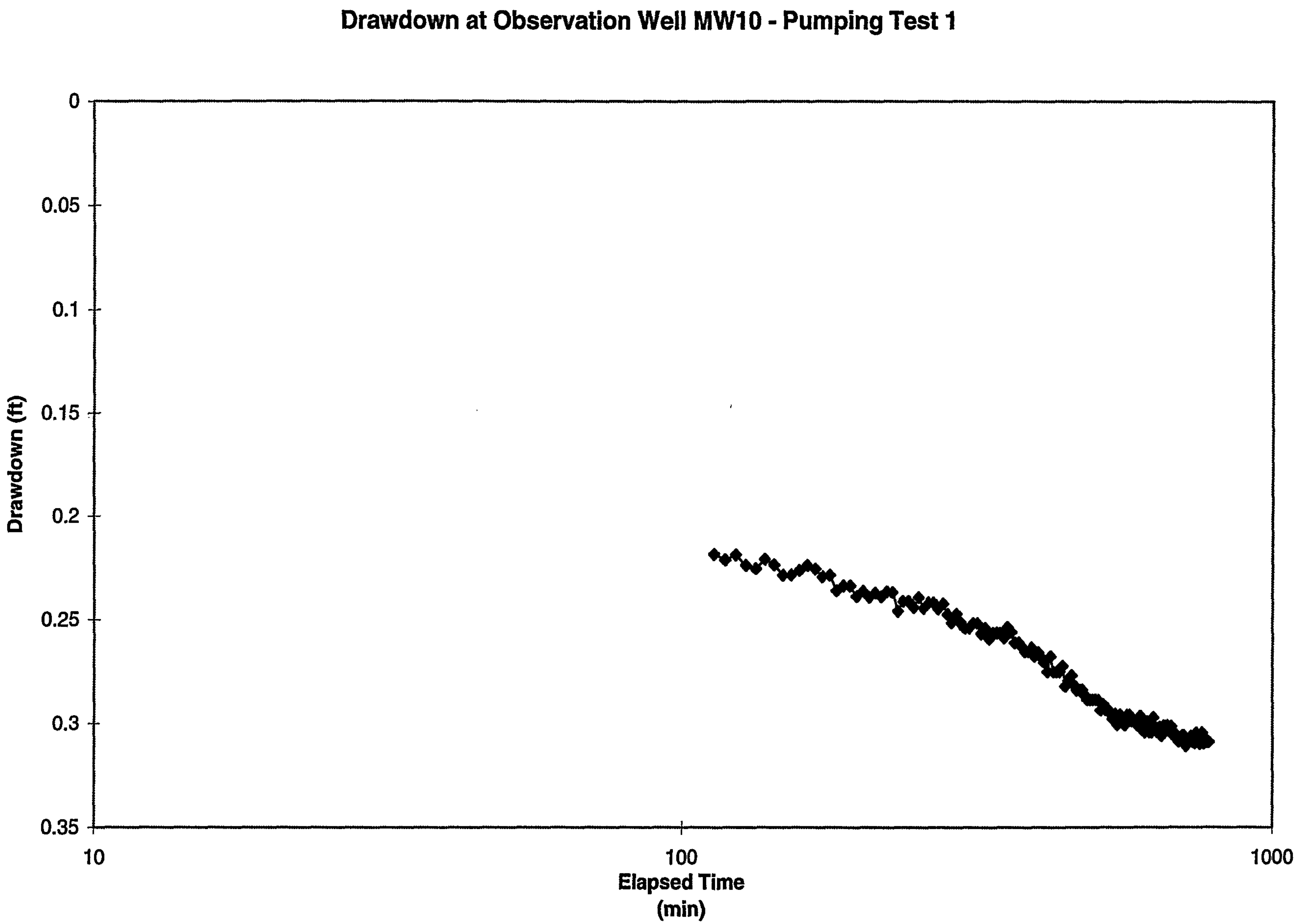


## Recovery Data at AZ-2 Pumping Well - Pumping Test 3




**CDM** Camp Dresser & McKee

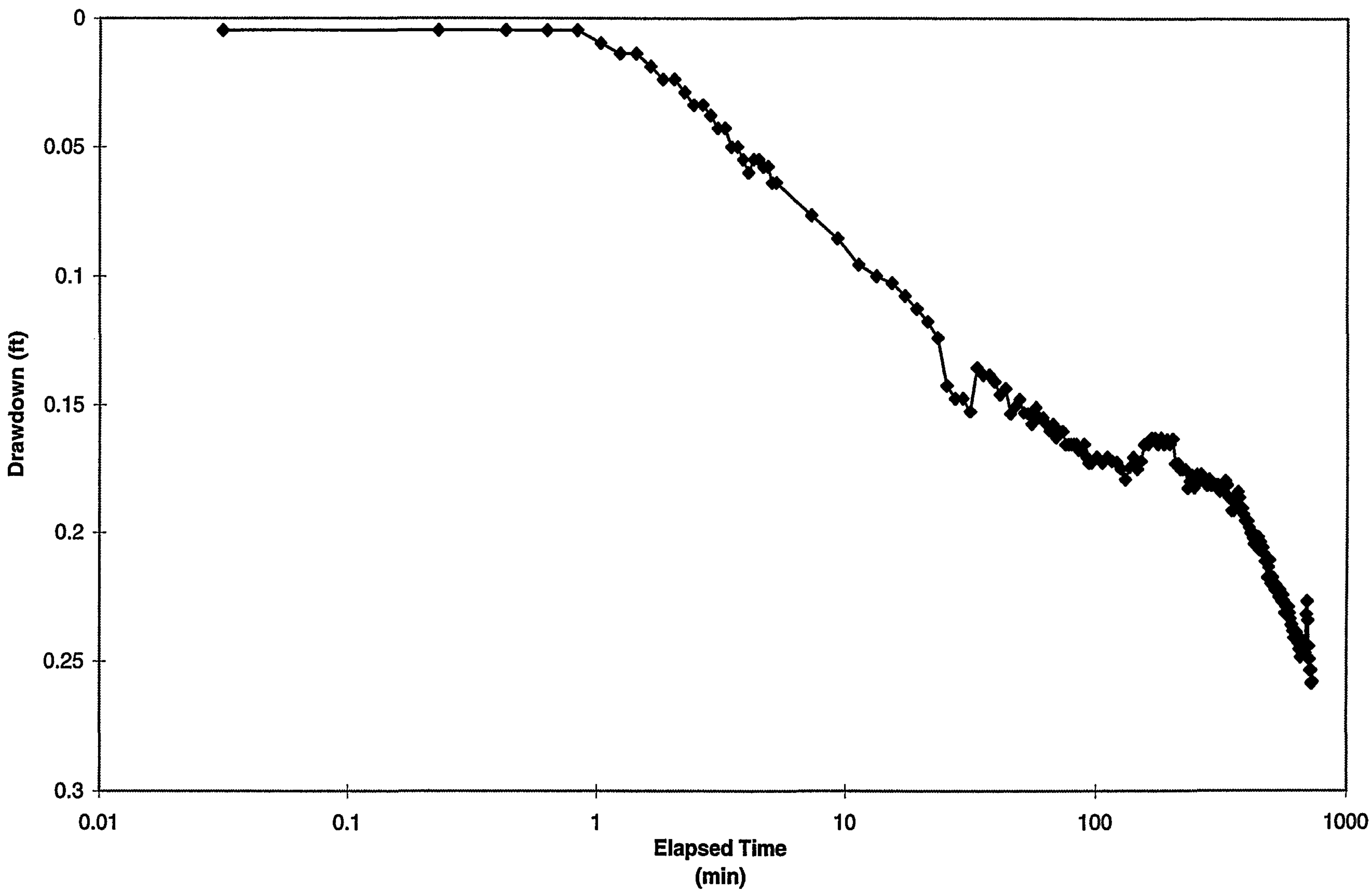
Figure 4 -58



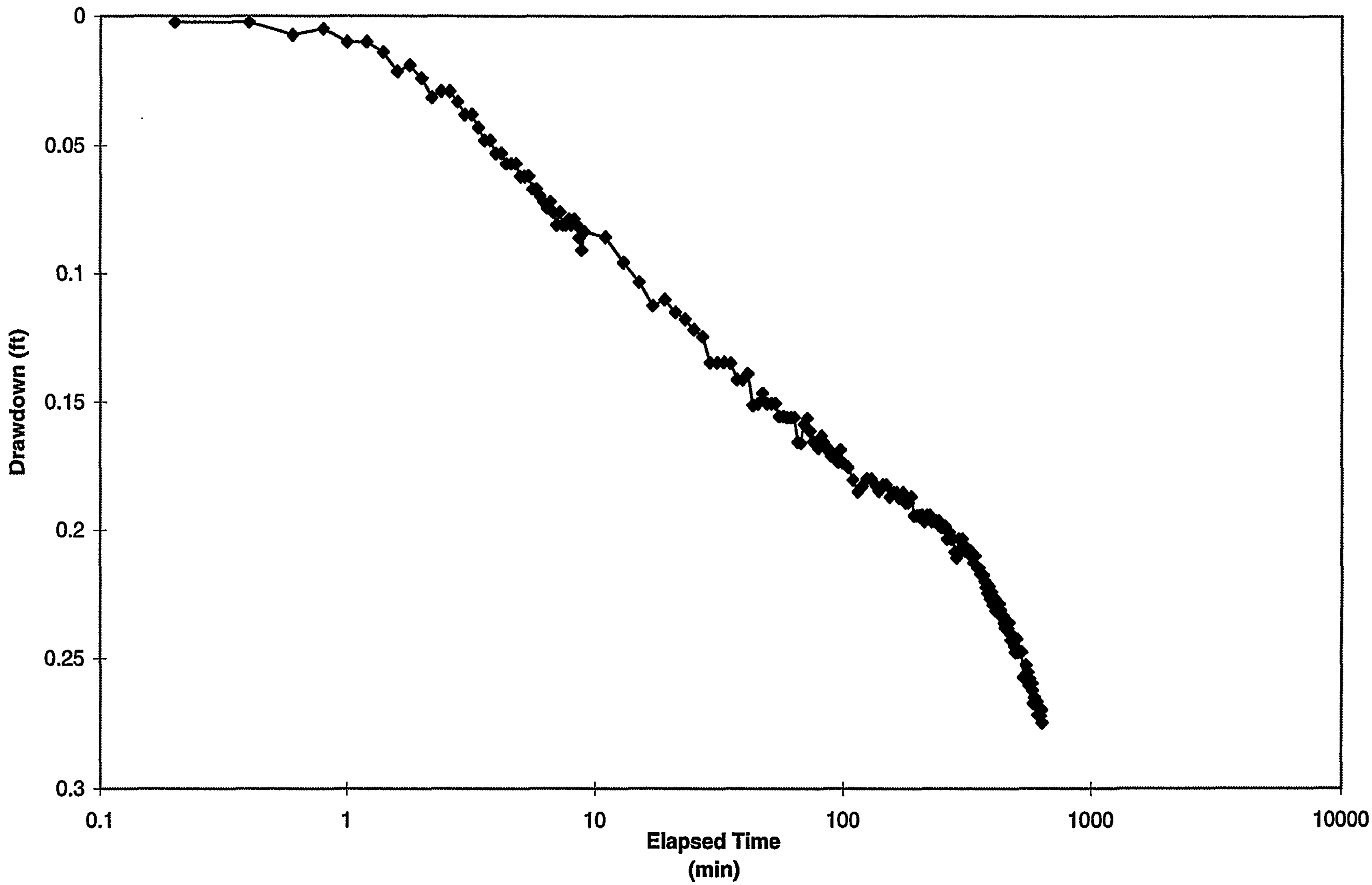

CDM Camp Dresser & McKee

Figure 4 -59

## Drawdown at Observation Well MW10 - Pumping Test 2



## Drawdown at Observation Well MW10 - Pumping Test 3



The following table displays the specific capacities calculated from the step-drawdown data after 120 minutes of pumping for each step, and the estimated transmissivities:

***Table 4-30***
***Table of Calculated Specific Capacities and Estimated Transmissivities***

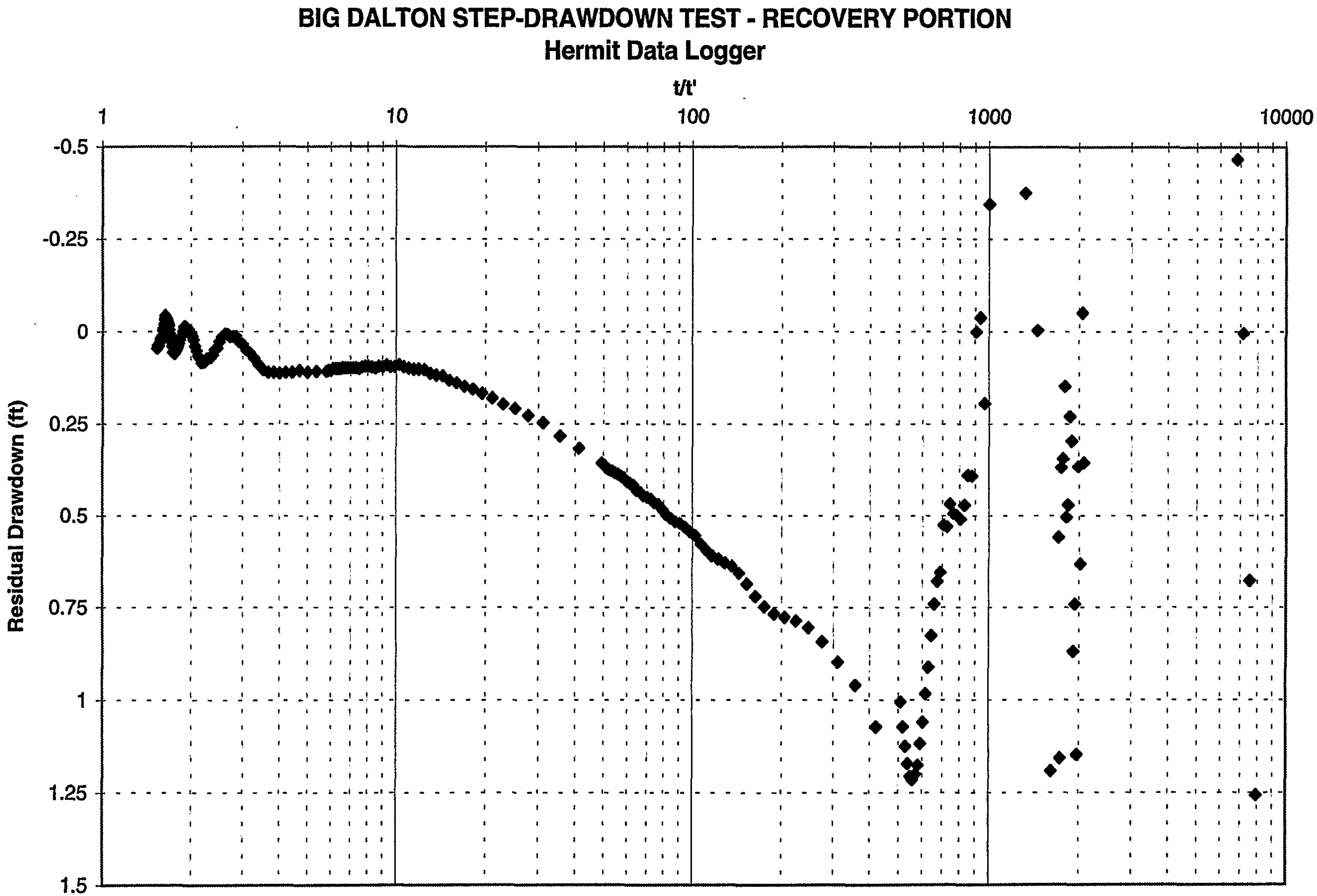
| *STEP* | *Discharge (gpm)* | *Drawdown (ft)* | *Specific Capacity (gpm/ft)* | *Transmissivity (gpd/ft)* | *Transmissivity ($ft^2$/day)* |
|---|---|---|---|---|---|
| 1 | 750 | 1.8 | 416.7 | 833,333 | 111,408 |
| 2 | 1,500 | 3.8 | 394.7 | 789,474 | 105,545 |
| 3 | 2,250 | 5.97 | 376.9 | 753,769 | 100,771 |
| 4 | 3,040 | 8.52 | 356.8 | 713,615 | 95,403 |

The thickness of the saturated aquifer at this location is approximately 1600 feet. This leads to estimates of hydraulic conductivity ranging from 60 to 70 ft/day, significantly lower than values estimated from the other tests. Hydraulic conductivities estimated from specific capacities may be inaccurate because they neglect the particular characteristics of the well and the test.

A semi-log plot of the recovery data depicting t/t′ versus residual drawdown does not yield a straight line from which to estimate transmissivity (Figure 4-62). The data may have been influenced by the initial slug of water which entered the aquifer from the well casing and surface piping immediately after pumping was discontinued.

## *4.3.5 Summary of Results*

During each of the pumping tests the aquifer in the BPOU area exhibited an almost immediate response to the assumption and cessation of pumping stresses. Aquifer transmissivities estimated from the pumping tests range from 140,000 to 900,000 $ft^2$/day. Hydraulic conductivity estimates based upon Cooper-Jacob analyses range from 200 to 800 ft/day. These estimates are consistent with the highly permeable materials located in this section of the San Gabriel Basin. This range of estimates is also comparable with hydraulic conductivity values simulated in the groundwater model in this section of the basin (see Section 5). The estimates of the storage coefficient range from 0.001 to 0.063. A summary of the aquifer test results is presented in Table 4-31.



BIG DALTON STEP-DRAWDOWN TEST - RECOVERY PORTION
Hermit Data Logger
t/t'
1
10
100
1000
10000
-0.5
-0.25
0
0.25
0.5
0.75
1
1.25
1.5
Residual Drawdown (ft)

**Table 4-31**
Baldwin Park Operable Unit
Summary of Aquifer Test Results

| Pumping Well | Test Type | Observation Well | Drawdown Data | | Recovery Data | |
|---|---|---|---|---|---|---|
| | | | Transmissivity ft²/day | Storage Coefficient | Transmissivity ft²/day | Storage Coefficient |
| Arrow | Arrow 72 Hour | Arrow | No Calculation | NA | 299,480 | NA |
| | Constant Rate Discharge | Lante | 323,672 | 0.0014 | 598,960 | NA |
| Arrow | Arrow 35 Minute Restart | Arrow | No Calculation | NA | 434,900 | NA |
| | | Lante | No Calculation | No Calculation | 652,337 | NA |
| Santa Fe #1 | Santa Fe 72 Hour | Santa Fe #1 | 158,548 | NA | 136,195 | NA |
| | Constant Rate Discharge | Osco MW-4 | 172,961 | 0.063 | No Calculation | NA |
| AZ-2 | AZ-2 Pump Test #1 | AZ-2 | 408,500 | NA | 510,600 | NA |
| | | ALR/TMC MW-10 | 785,500 | 0.0011 | 720,800 | NA |
| AZ-2 | AZ-2 Pump Test #2 | AZ-2 | 467,000 | NA | 809,400 | NA |
| | | ALR/TMC MW-10 | 699,000 | 0.00109 | 894,300 | NA |
| AZ-2 | AZ-2 Pump Test #3 | AZ-2 | 514,400 | NA | 561,000 | NA |
| | | ALR/TMC MW-10 | 727,500 | 0.00113 | 687,100 | NA |
| Big Dalton | Big Dalton Step Test | | | | | |
| | Step #1 | Big Dalton | 111,408 | NA | NA | NA |
| | Step #2 | Big Dalton | 105,545 | NA | NA | NA |
| | Step #3 | Big Dalton | 100,771 | NA | NA | NA |
| | Step #4 | Big Dalton | 95,403 | NA | No Calculation | NA |

NA: Not Applicable

# 5 Section Five

# Draft Section 5
# Groundwater Modeling

## 5.1 Introduction

The purpose of the groundwater modeling presented in this report is is to evaluate the groundwater containment systems proposed for the Baldwin Park Operable Unit (BPOU) Pre-Remedial Design. The San Gabriel Basin is located in the eastern portion of Los Angeles County, and is shown on Figure 5-1. The BPOU Water Delivery Plan prepared for Three Valleys Municipal Water District is included in the simulation of the groundwater extraction and containment scenarios. The remedial extraction schemes are to be undertaken in Subarea 1 and Subarea 3 of the BPOU.

The principal goal of this study was to develop and calibrate a three-dimensional regional groundwater flow model of the main San Gabriel Basin, and to apply this model to evaluated the effectiveness of proposed extraction schemes in the BPOU. This model is capable of simulating the impact of recharge and pumping operations throughout the basin, and be of sufficient detail to allow assessment of the proposed extraction scheme designed to control migration of volatile organic compounds, primarily trichloroethylene, tetrachloroethylene and carbon tetrachloride, in the Baldwin Park Operable Unit.

The groundwater flow model presented herein has been modified, as described below, since it's application to evaluate the operation of the proposed Baldwin Park OU Water Delivery Project for Three Valleys Municipal Water District (CDM, 1996).

## 5.2 Groundwater Flow Model

The San Gabriel Basin regional groundwater flow model applied to the BPOU Pre-Remedial Design project is a five layer model defined by 6 levels of nodes, with over 1800 nodes per level. The areal extent of the model includes all of the Main San Gabriel Basin, and is of sufficient detail to evaluate the responses of the groundwater flow system to the proposed Baldwin Park Operable Unit extraction pumping. The development, calibration and application of the groundwater flow model is presented in the following sections.

### *5.2.1 DYNFLOW Computational Code*

The groundwater flow computer code used in this study is the fully three-dimensional, finite element groundwater flow model, DYNFLOW. This model has been developed over the past 15 years by CDM engineering staff, and is in general use for such large scale basin modeling projects. It has recently been applied to portions of the San Fernando Basin, to early versions of the San Gabriel Basin model, to a detailed model of the Puente Basin, and to several studies in the West Coast Basin.

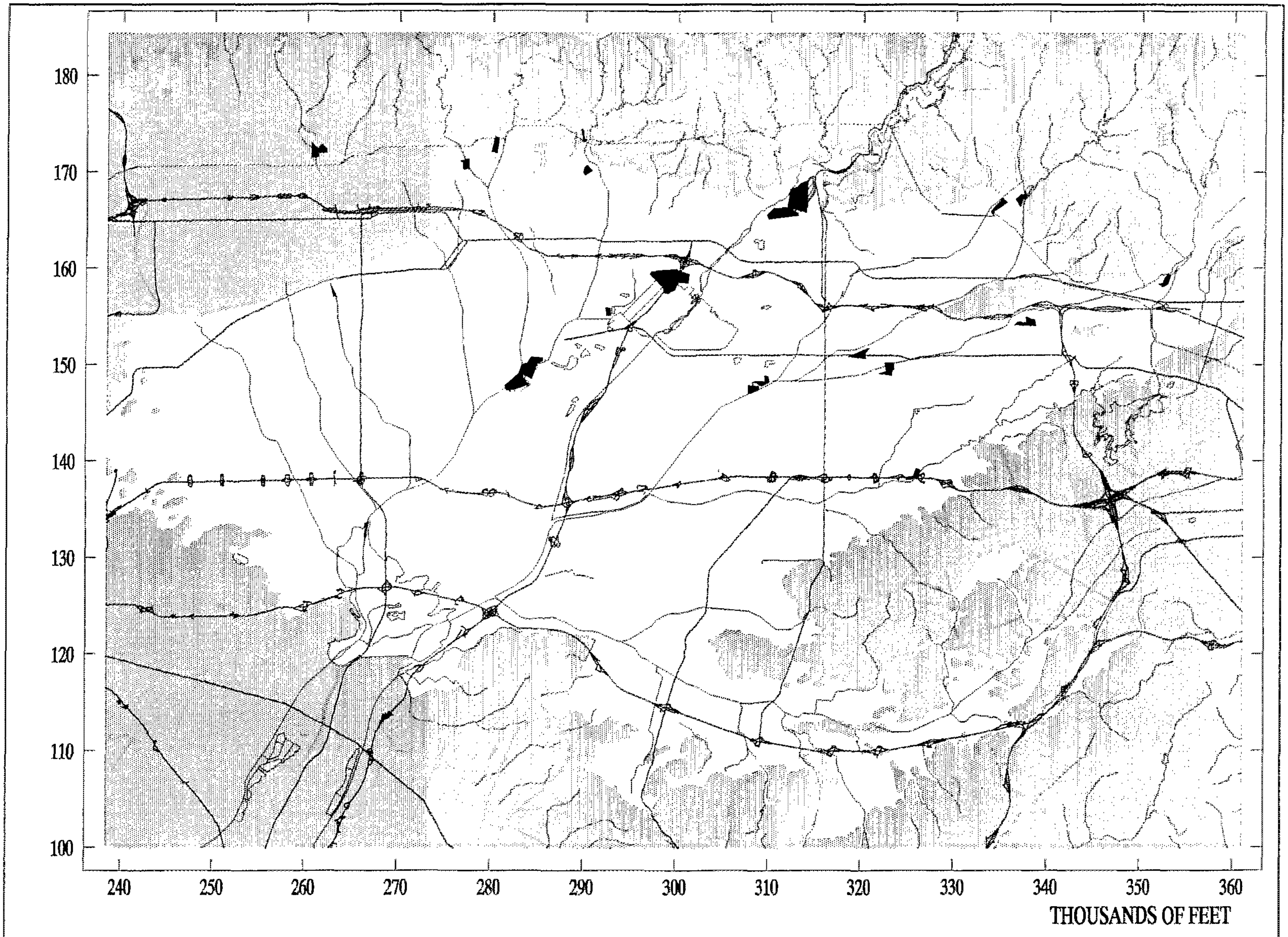



FIGURE 5-1

San Gabriel Basin
Primary Roads, Streams, and Spreading Basins

Baldwin Park Operable Unit Pre-Remedial Design

CDM
environmental engineers, scientists, planners, & management consultants

The governing equation for three-dimensional groundwater flow that is solved by DYNFLOW is:

$$S_s \frac{\partial}{\partial t} \quad \frac{\partial}{\partial x_i} K_{ij} \frac{\partial}{\partial x_j} ;i,j \quad 1,2,3$$

where the state variable + represents the potentiometric head [L]; $K_{ij}$ represents the hydraulic conductivity [$LT^{-1}$] tensor; $S_s$ is the specific storativity (volume/volume/length), [$L^{-1}$]; $x_j$ is a cartesian coordinate and t is time.

DYNFLOW uses a grid built with a large number of tetrahedral elements. These elements are triangular in plan view, and give a wide flexibility in grid variation over the area of study. An identical grid is used for each level of the model, but the thickness of each model layer (the vertical distance between levels in the model) can vary at each point in the grid. In addition, 2-dimensional elements can be inserted into the basic 3-dimensional grid to simulate thin features such as faults. One-dimensional elements can be used to simulate the performance of wells which are perforated in several model layers.

DYNFLOW accepts various types of boundary conditions on the groundwater flow system including:

- Specified head boundaries (where the piezometric head is known, such as at rivers, lakes, or other points of known head)
- Specified flux boundaries (such as rainfall infiltration, well pumpage, and no-flow "streamline" boundaries)
- Rising water boundaries; these are hybrid boundaries (specified head or specified flux boundary) depending on the system status at any given time.

The DYNFLOW code has been reviewed and tested by the International Groundwater Modeling Center (IGWMC)[1], and has been extensively tested and documented by CDM.[2]

### 5.2.2 Finite-Element Grid

Figure 5-2 depicts the numerical grid of the regional model. The entire Puente Valley is not included in the regional model; a separate sub-model for that basin exists. The regional grid contains more than 1800 nodes, and has over 3500 elements in plan view. The model has been discretized vertically into six levels, and thus includes five model layers to represent the response of the aquifer in the basin. The DYNFLOW convention is to begin numbering levels and layers from the bottom of the model; thus level 1 in the model represents the elevation of the top of the bedrock, and level 6 represents the top of the model. The source of data of the bedrock elevation is the

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[1]van de Heijde, Paul K.M., "Review of DYNFLOW and DYNTRACK Ground Water Simulation Codes," International Ground Water Modeling Center Report 85-17, May 1985.
[2]CDM, "DYNFLOW Groundwater Flow Model Users Manual", 1995

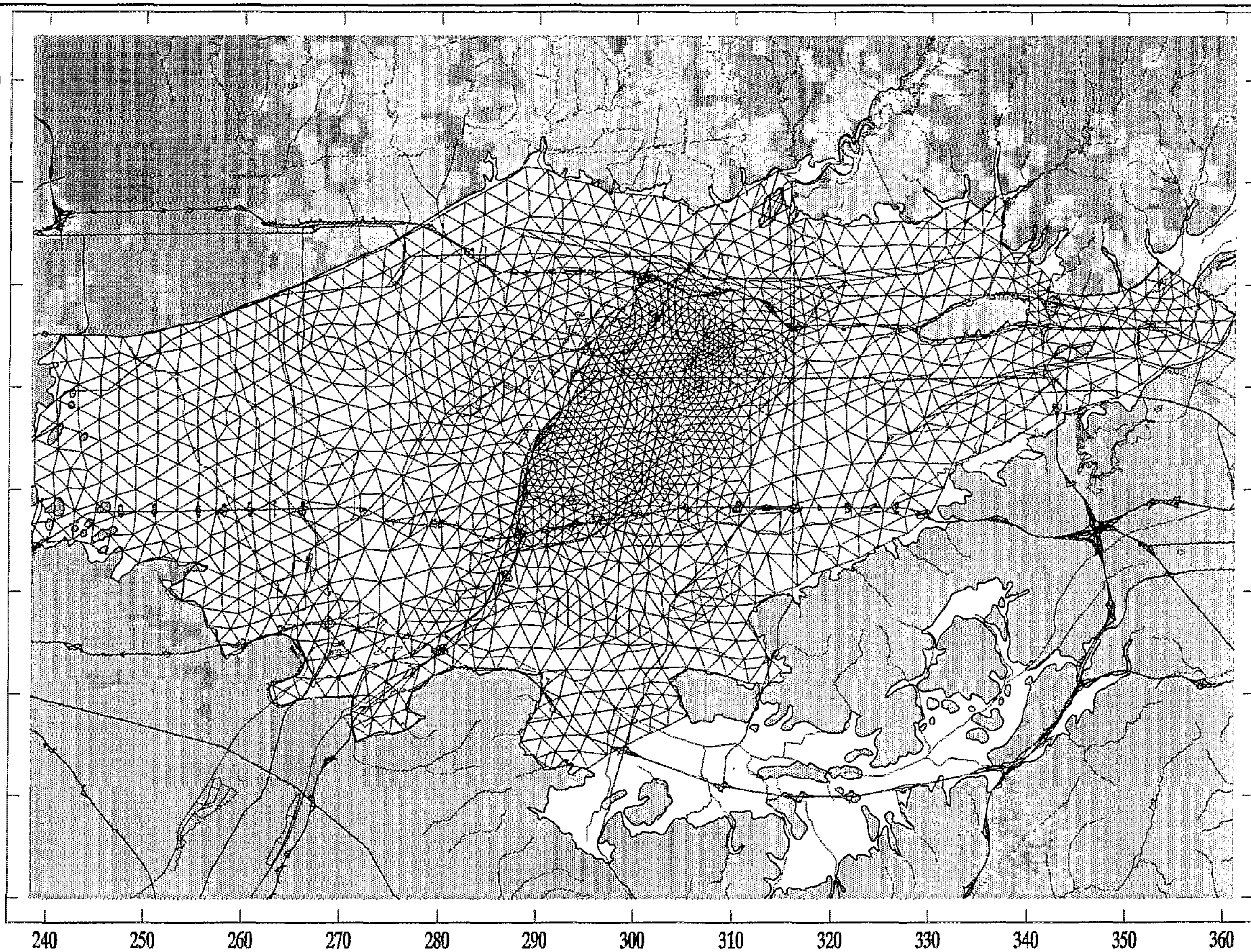
CH2M Hill/EPA San Gabriel Basin GIS. The elevation of the level 6 nodes are specified at the ground surface.

Layer 1 is the lowest layer of the model and is used to represent the lower portions of the aquifer. In the central portion of the basin, the top of layer 1 is generally below elevation -400 feet MSL, and the layer has a maximum thickness of approximately 2,000 feet. Layers 2 through 5 represent the uppermost section of the aquifer; these layers extend from -400 feet MSL to about +400 ft MSL in the central section of the basin. Each of these upper layers is of similar thickness, and each is approximately 200 feet thick in the central section of the basin. The layers decrease in thickness towards the western and eastern boundaries of the basin, and along the edges of the basin some of the upper layers are pinched out. These layers effectively separate the upper aquifer into several depth zones, which are used to more effectively represent the distribution of pumping at varying depths in the basin.

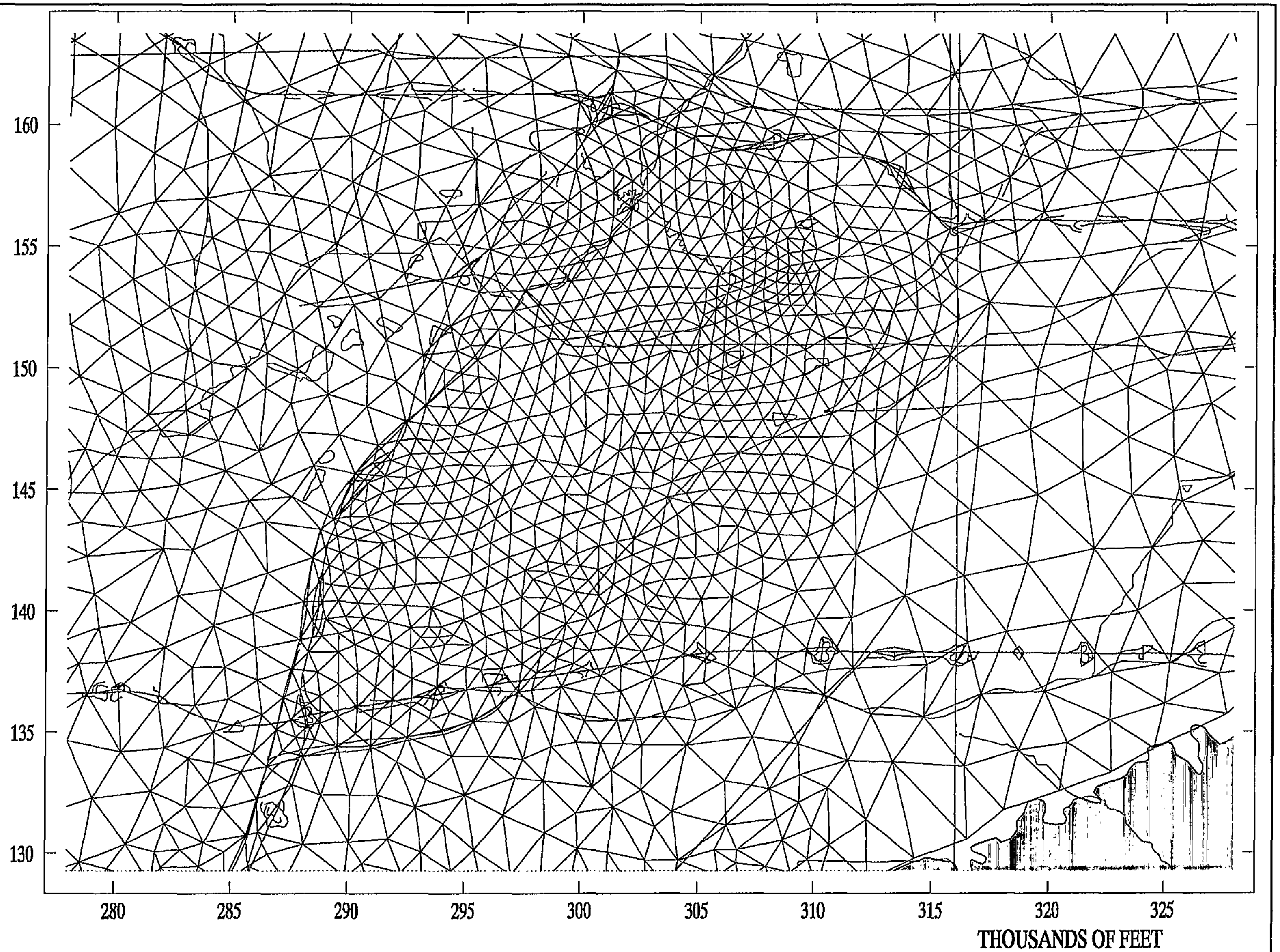
Important fault structures within the basin model area are modeled with two-dimensional elements superimposed on the three-dimensional grid. These 2-dimensional elements can be used to control horizontal flow across the element. The Duarte Fault and the One Hill-Way Hill Fault, which are believed to have an impact on the groundwater flow system are explicitly modeled in this manner. These fault regions can be identified as long thin series of elements on Figure 5-2. All other areas in the basin are modeled with three-dimensional elements.

Grid density varies across the basin. Near the edges of the basin, the nodes are spaced farther apart and elements are larger; nodal spacing in this region is about 2,000 feet. In the Baldwin Park Operable Unit study area the nodal spacing is much closer and the grid discretization is much finer; here nodal spacing is typically 600 to 1000 feet. The finer grid discretization is needed to reproduce the impacts of proposed remedial pumping and recharge in the Baldwin Park area. Figure 5-3 presents this area of the numerical grid in detail.

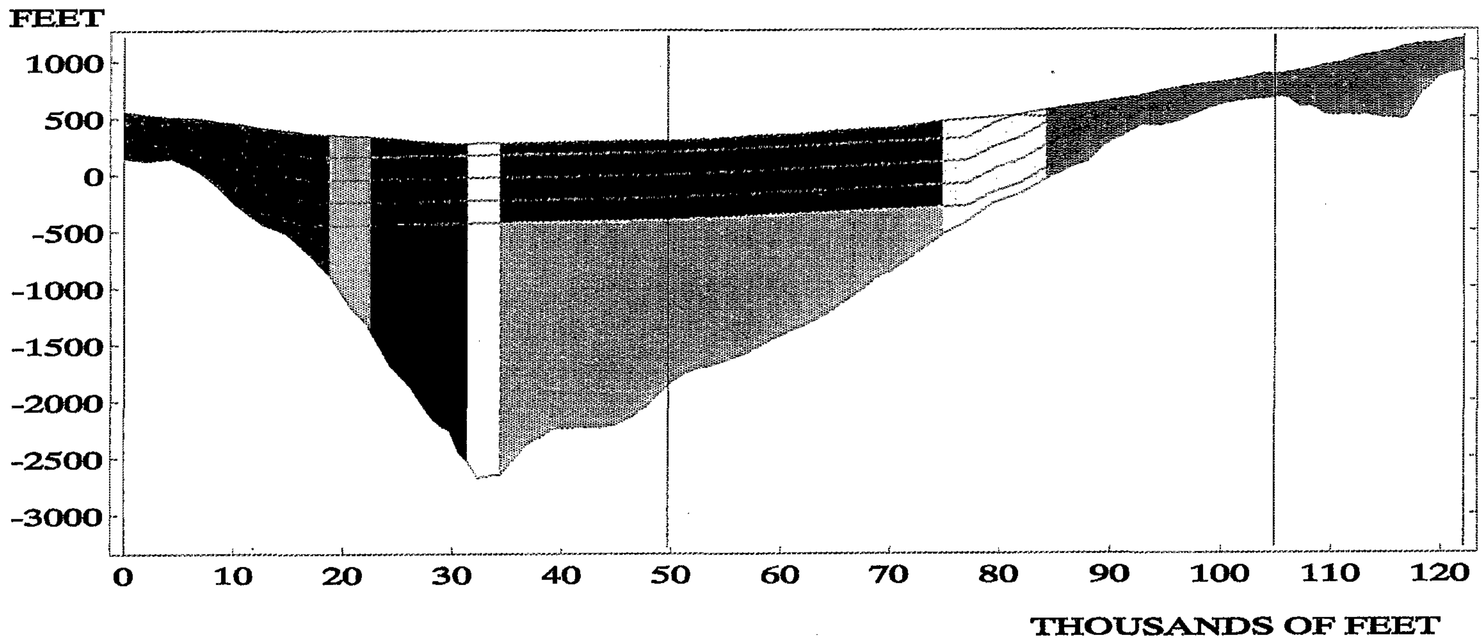
Figures 5-4 and 5-5 show typical cross-sections through the modeled area, and illustrate the dramatic changes in basin depth across the valley. Figure 5-4 presents a basic west-east cross section (located to intersect the junction of the I-10 with the San Gabriel River at its middle), while Figure 5-5 shows a section running from north to south along the San Gabriel River from the mouth of the San Gabriel Canyon to Whittier Narrows. The cross-sections also show assigned hydraulic conductivity zones in the model. These are discussed in Section 5.2.5.




| FIGURE 5-2 | Finite Element Grid<br><br>Regional Model - Subject to Further Calibration<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>*environmental engineers, scientists, planners, & management consultants* |
|---|---|---|



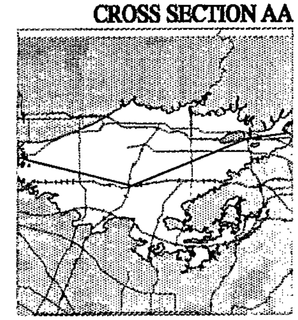

| FIGURE 5-3 | Finite Element Grid - Local Scale<br><br>Regional Model - Subject to Further Calibration<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|



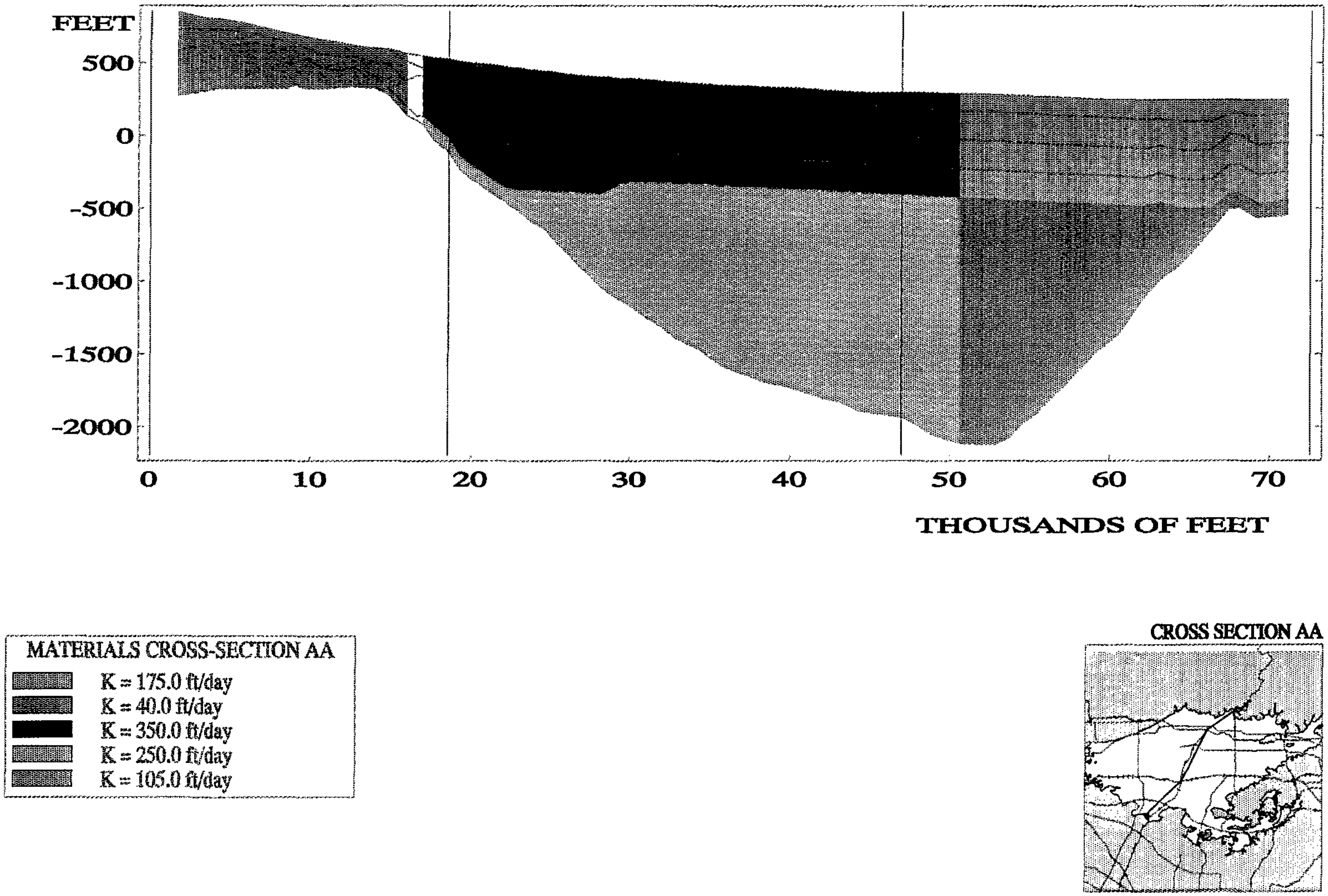

MATERIALS CROSS-SECTION AA

K = 25.0 ft/day
K = 40.0 ft/day
K = 60.00 ft/day
K = 350.0 ft/day
K = 250.0 ft/day
K = 30.0 ft/day
K = 10 ft/day
K = 15.0 ft/day
K = 50.0 ft/day

CROSS SECTION AA



| | | |
|---|---|---|
| FIGURE 5-4 | West to East Cross Section<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM environmental engineers, scientists, planners, & management consultants |




| | | |
|---|---|---|
| FIGURE 5-5 | North To South Cross Section<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |

### 5.2.3 Model Boundary Conditions

The San Gabriel Basin Regional Groundwater Model uses three types of boundary conditions. These include no flow boundaries, specified flux boundaries, and specified head boundaries.

- No-Flow Boundaries: The western, southwestern, and southeastern boundaries of the model, with the exception of the outlet at Whittier Narrows and the boundary with Puente Valley, are defined as no-flow boundaries.

- Specified Flux Boundaries: There are three distinct sections which are modeled with specified fluxes. In the San Dimas area, in the northeast corner of the basin, a specified flux is used to define inflow to the San Gabriel Basin from the Chino Basin. This flux is set at 6,900 acre-feet per year (ac-ft/yr), and is evenly distributed across the 3 nodes which define the boundary with the Chino Basin. Along the Raymond Fault a flux of 6,200 ac-ft/yr is specified. This flux is concentrated at nodes along the northeastern one-third of the boundary, approaching the San Gabriel Mountains. The third area of specified flux is along the base of the San Gabriel Mountains. Here, 5,000 ac-ft/yr are evenly distributed at the nodes along this boundary.

- The specified boundary fluxes are listed in Table 5-1. All of the specified flux amounts used in the model are based upon the 27-year average of subsurface inflow presented in Bulletin No. 104-2, Planned Utilization of Ground Water Basins, San Gabriel Valley, California Department of Water Resources, 1966. These specified fluxes are not varied in any of the simulations.

***Table 5-1***
***Specified Boundary Fluxes***

| *Boundary Location* | *Total Flux in acre-feet per year* |
|---|---|
| Fluxes across Raymond Fault | 6,200 |
| Fluxes from the San Gabriel Mountains | 5,000 |
| Fluxes from Chino Basin | 6,900 |

- Fixed-Head Boundaries: Two boundaries are governed by fixed heads. These are at the boundary with Puente Valley, and at the basin outlet at Whittier Narrows. Specified head levels in these areas are based upon water level observations in the CH2M Hill/EPA San Gabriel Basin Geographic Information System (GIS), and the Los Angeles County Department of Public Works water level database. These heads are varied on a quarterly basis in the transient simulations.

### 5.2.4 External Model Stresses

The San Gabriel Basin Regional Groundwater Model includes three types of external stresses to represent the climatic conditions and water supply activities which occur in the basin. These stresses are production pumping, water recharged at spreading basins, and areal recharge resulting from precipitation and returned water.

### 5.2.4.1 Pumping Fluxes

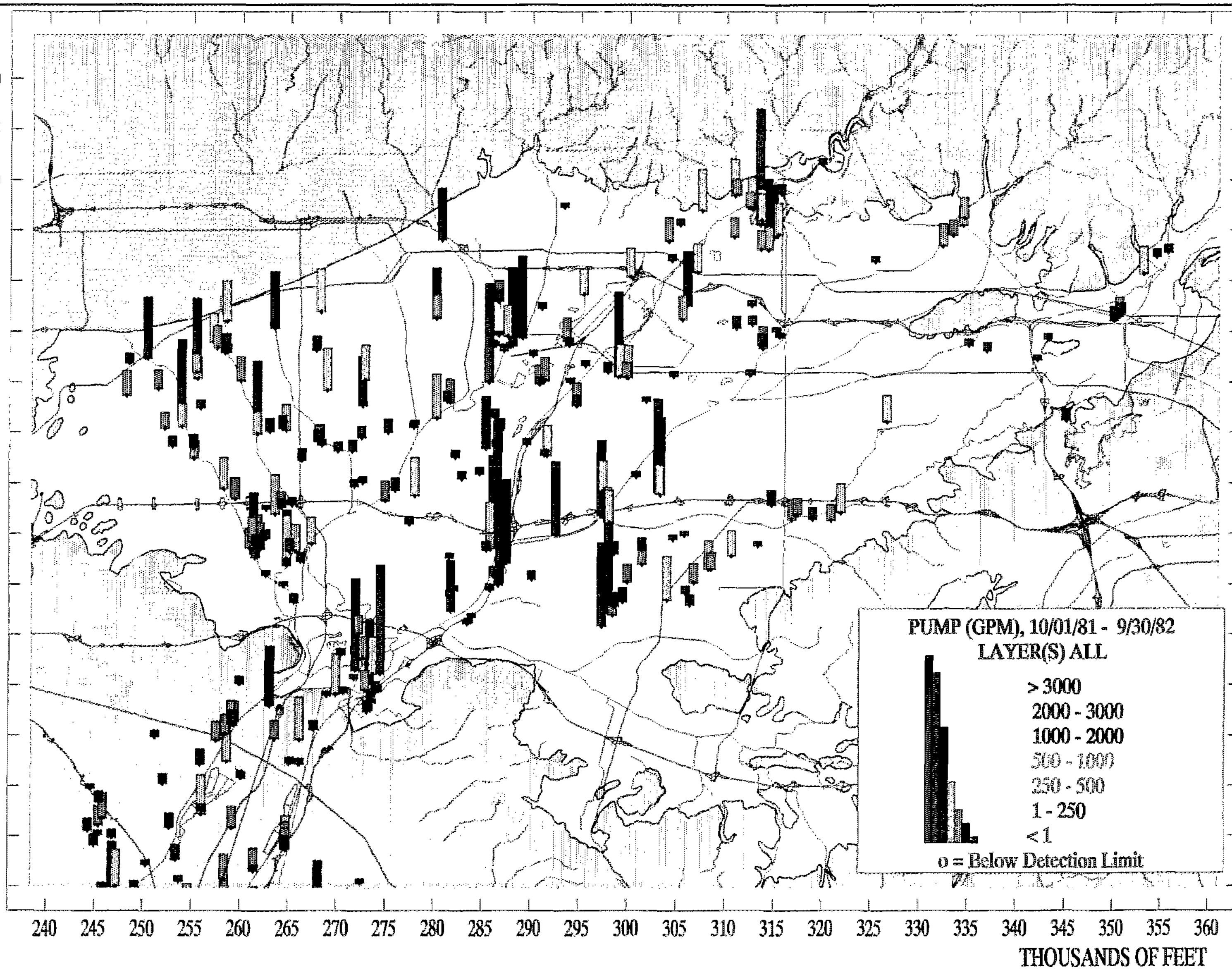
The pumping fluxes applied in the regional model are taken directly from the pumping flux data compiled in the CH2M Hill/EPA San Gabriel Basin GIS. The steady-state calibration simulations used the average annual pumping flux for the Water Year October 1, 1981 to September 30, 1982. Figure 5-6 illustrates the average groundwater pumping applied for the steady state calibration. Figure 5-7 illustrates the magnitude and location of the total average pumping for the period from Water Year 1981-1982 through Water Year 1992-1993. These appear to be very similar, indicating no major change in pumping operations during this period. Seasonal and annual variations in overall basin pumping are presented in Section 5.2.7. The actual pumping fluxes applied to the model during the transient simulations were varied on a quarterly basis.

### 5.2.4.2 Recharge

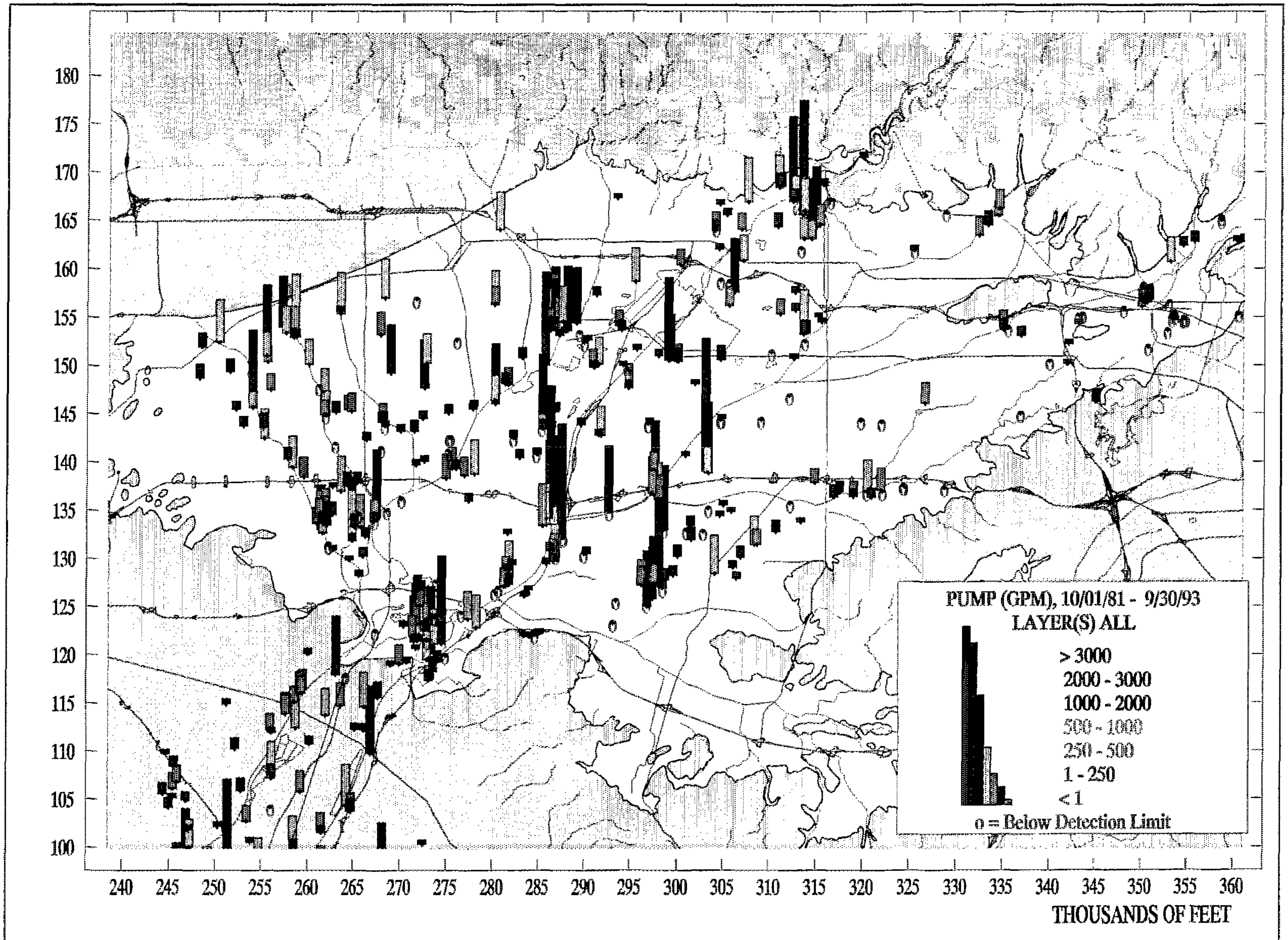
Two types of recharge are applied in the regional model. Rainfall recharge, and returned water from irrigation and distribution system leakage, are applied on an element basis throughout the basin. A total areal recharge of 7.5 inches per year is applied in this manner. This recharge quantity was estimated based upon a 3.4 in/yr of recharge from precipitation (this is approximately 18.5% of the average annual precipitation of 18.2 inches for the 1933-1960 period, CDWR, 1966) and 4.1 in/yr of recharge from returned water. This rate for returned water is consistent with estimates used in other regional modeling studies in large basins in the Los Angeles Basin area. The areal recharge was applied uniformly across the basin, and was maintained at a constant rate for all simulation runs (both steady state and transient).

In addition to the areal recharge, recharge is also introduced into the model on a nodal basis; this nodal recharge is used to represent all concentrated inflows to the groundwater system. Water recharged at spreading basins and along the San Gabriel River is modeled as nodal point recharge. The locations of the spreading facilities are shown on Figure 5-8. At each spreading basin the recharge is applied equally to the nodes used to represent that spreading facility. Recharge amounts are generally taken from Water Recharge Study For TVMWD Proposed Project, Stetson Engineers Inc., 1995. Recharge amounts at selected spreading sites for the period of October, 1982 - September, 1987 are taken from data supplied by Harding Lawson Associates (as reported by Los Angeles Department of Public Works). The recharge flux at the spreading basins and along the San Gabriel River is varied on a quarterly basis during the transient simulations.

The amount of nodal recharge applied during the 1981-1982 calibration period is listed in Table 5-2. Similar data were input to the model for each of the 47 quarterly periods of the transient simulations.




| | | |
|---|---|---|
| FIGURE 5-6 | 1981 - 1982 Water Year Pumping Fluxes<br>Steady State Calibration Period<br>EPA - CH2M HILL Database<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |




| FIGURE 5-7 | Average Annual Pumping Fluxes<br>10/1/81 - 9/30/93<br>EPA - CH2M HILL Database<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
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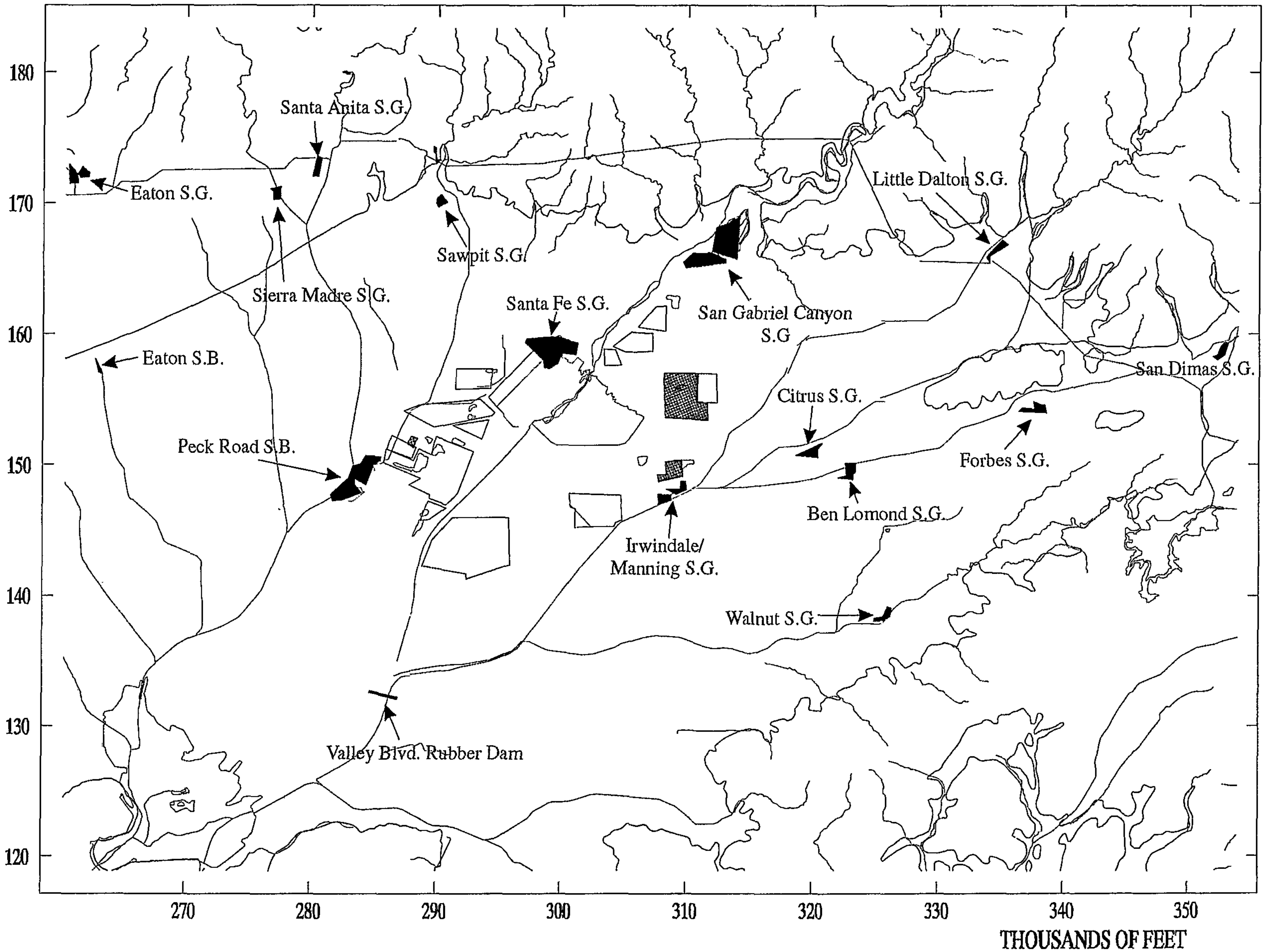


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Figure 5-8
Primary Spreading Facilties

Baldwin Park Operable Unit Pre-Remedial Design

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| ***Table 5-2*** ***Applied Recharge For Water Year 1981-1982*** | |
|---|---|
| *Spreading Facility* | *Recharge Amount in acre-feet per year* |
| Valley Rubber Dam | 0 |
| Santa Fe Spreading Ground | 35,046 |
| San Dimas Spreading Ground | 2,265 |
| Little Dalton Spreading Ground | 206 |
| Citrus Spreading Ground | 0 |
| Forbes Spreading Ground | 629 |
| Big Dalton Spreading Ground | 1,036 |
| Walnut Creek Spreading Ground | 1,720 |
| Ben Lomand Spreading Ground | 2,975 |
| San Gabriel Canyon Spreading Ground | 8,571 |
| Buena Vista Spreading Basin | 611 |
| Irwindale/Manning Spreading Ground | 2,833 |
| Peck Road Spreading Basin | 7,303 |
| Eaton Spreading Basin | 2,033 |
| Sawpit Spreading Ground | 1,008 |
| Santa Fe Diversion Channel | 13,050 |
| *Recharge along reaches of San Gabriel River* | |
| Whittier Narrows to Valley Boulevard | 0 |
| Valley Boulevard to Santa Fe Dam | 0 |
| Santa Fe Dam to Foothill Boulevard | 10,982 |
| Foothill Boulevard to Morris Dam | 28,062 |
| **Total Spreading Recharge** | **118,330** |

### 5.2.5 Aquifer Hydraulic Properties

The following aquifer properties are specified in each of the three-dimensional elements of the model; horizontal hydraulic conductivity, vertical hydraulic conductivity, specific yield and specific storativity. The only property specified for the two-dimensional elements used to represent the fault zones is horizontal hydraulic conductivity.

#### 5.2.5.1 Horizontal Hydraulic Conductivity

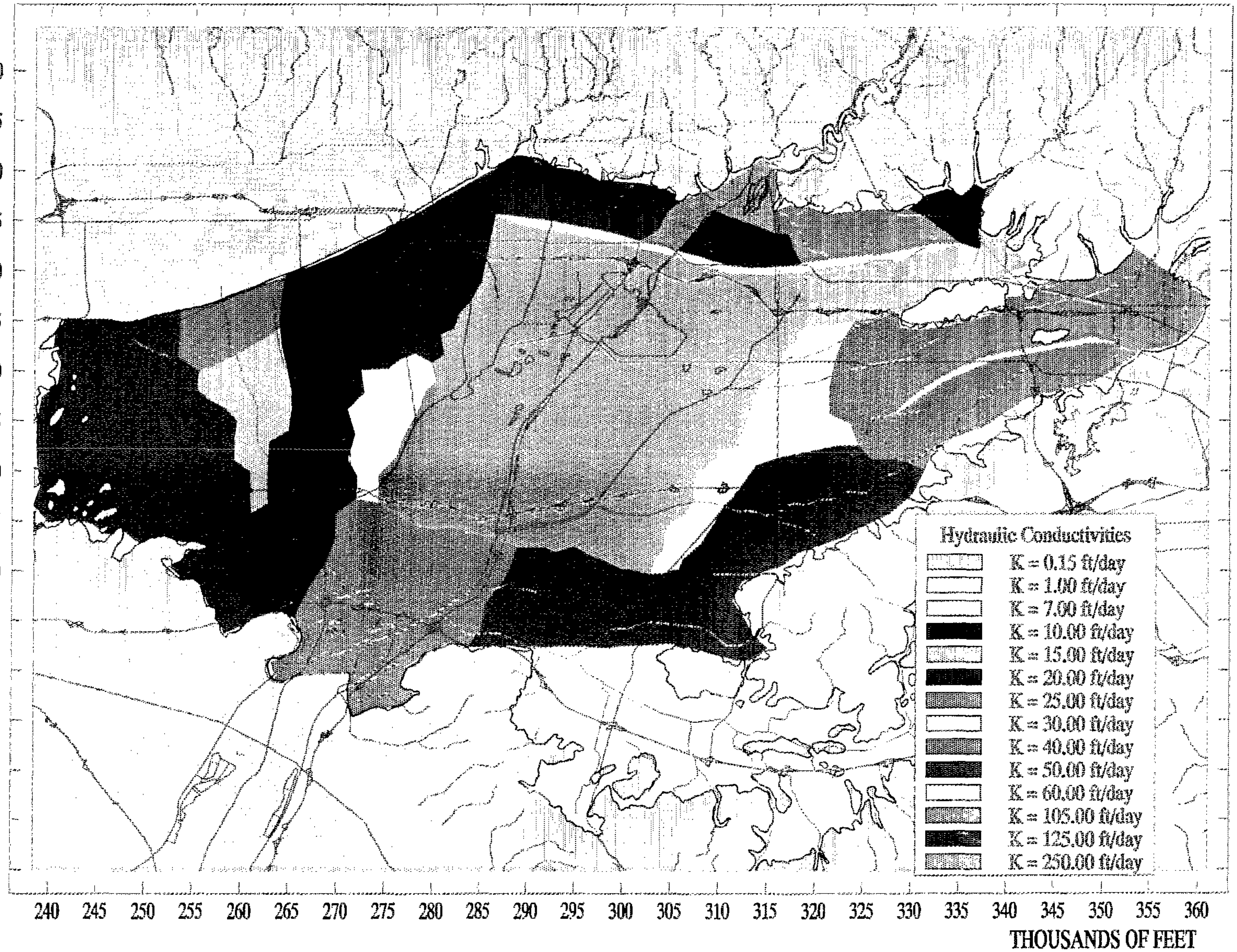
The horizontal hydraulic conductivities used in the model are presented on Figures 5-9 and 5-10. The DYNFLOW numbering convention is to number layers from the bottom to the top. The configuration of horizontal hydraulic conductivity in model layer 1, the bottom layer is shown on Figure 5-9. The configuration of horizontal hydraulic conductivity for model layers 2, 3, 4 and 5 is shown on Figure 5-10. The alluvial materials of the aquifer become much thinner at the edges of the basin, and the upper layers of the model were pinched out to represent the thinning aquifer.

Hydraulic conductivities were initially estimated based upon the examination of boring logs, pump test data at several locations, and from estimates developed in prior regional modeling work by EPA. Plots showing the hydraulic conductivity data from these studies are included on Figures 5-11 through 5-14.

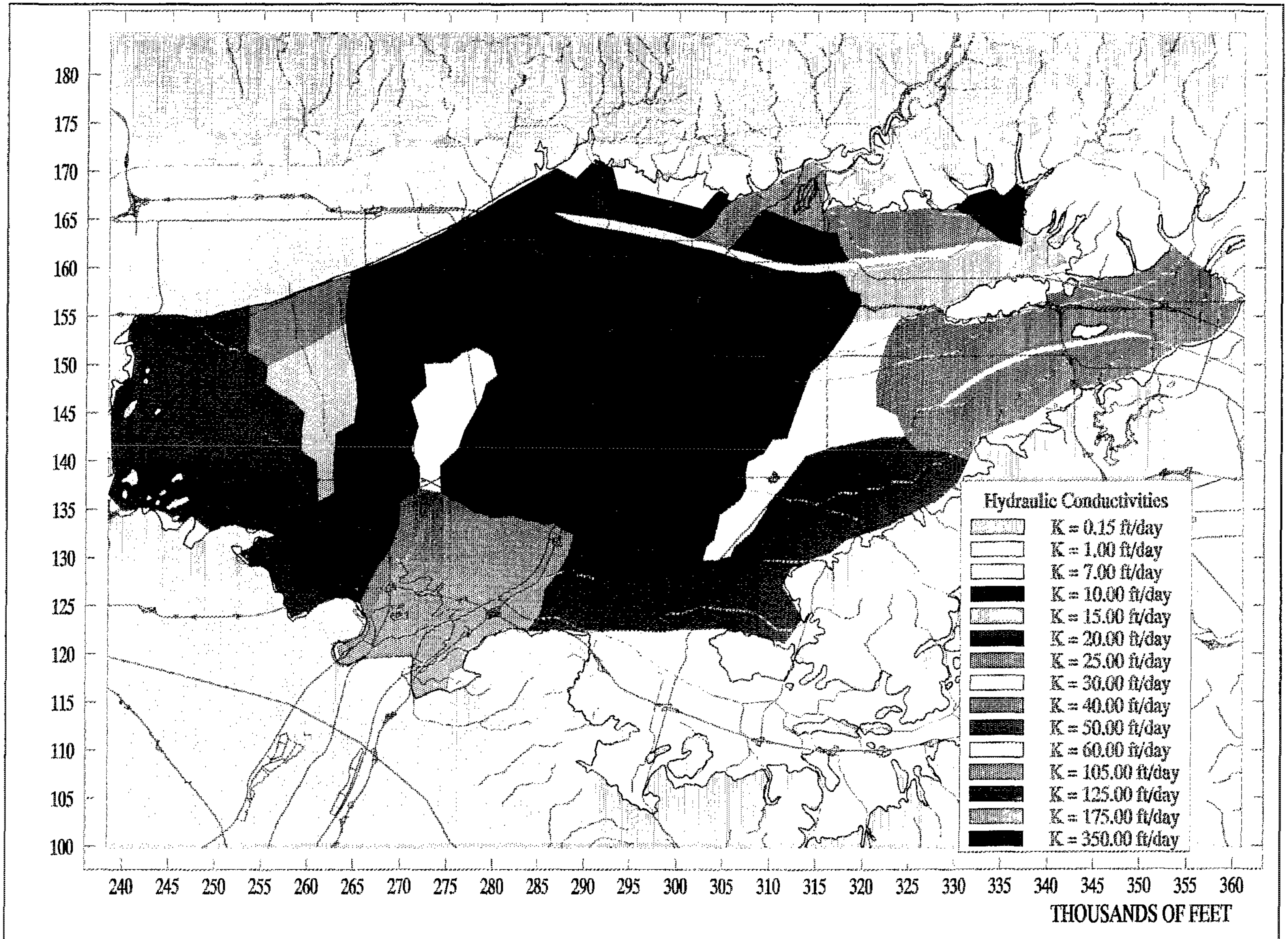
Examination of boring logs for various wells in the basin did not indicate a distinct regional-scale stratification of aquifer materials. Therefore the hydraulic conductivities of the model for layers 2 through 5, are the same for any element (i.e. a vertical column at that element would have the same properties for every layer in the model). In layer 1 a different conductivity from that used in the overlying layers is used in a few locations; these are in the vicinity of Whittier Narrows and in the center of the basin. In other regions the conductivity in layer 1 is the same as in the overlying layers 2 through 5.

In general, the initial set of values for hydraulic conductivities in the model were selected to be consistent with a geological depositional sequence which would result in higher conductivity materials along the San Gabriel River and Rio Hondo channels, and finer, lower conductivity materials at the edges of the basin. This distribution of properties was applied to the initial model, and these values were then adjusted during the calibration process (see Sections 5.2.6 and 5.2.7). The hydraulic conductivities shown on Figures 5-9 and 5-10 are those which were selected based on the calibration studies.

As shown on Figures 5-9 and 5-10 the horizontal conductivities specified along the outer portions of the basin generally range from 7 to 50 feet/day. Just upgradient of Whittier Narrows the conductivities used are 40 feet/day in layer 1, and 175 feet/day in the upper layers (2-5) of the model. In the central portion of the basin, south of the Duarte Fault, conductivities range from 250 to 350 feet/day. Through the San Gabriel Canyon, north of the Duarte Fault the hydraulic conductivity used is 105 feet/day.




| FIGURE 5-9 | Model Hydraulic Conductivities<br>Bottom of Model - Layer 1<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|




| FIGURE 5-10 | Model Hydraulic Conductivities<br>Layers 2 through 5<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|

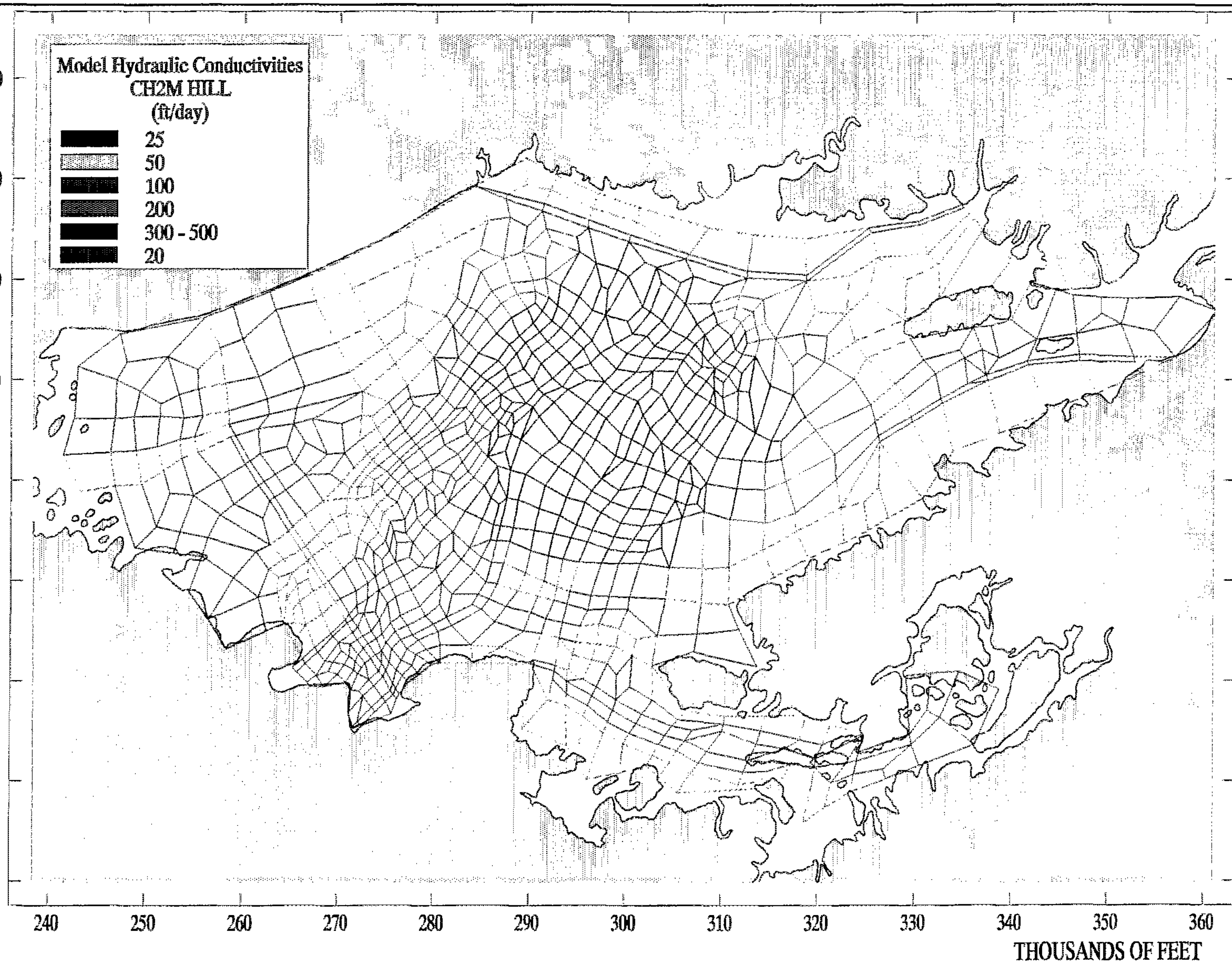



FIGURE 5-11

Model Hydraulic Conductivities

EPA / CH2M Hill San Gabriel Basin Model

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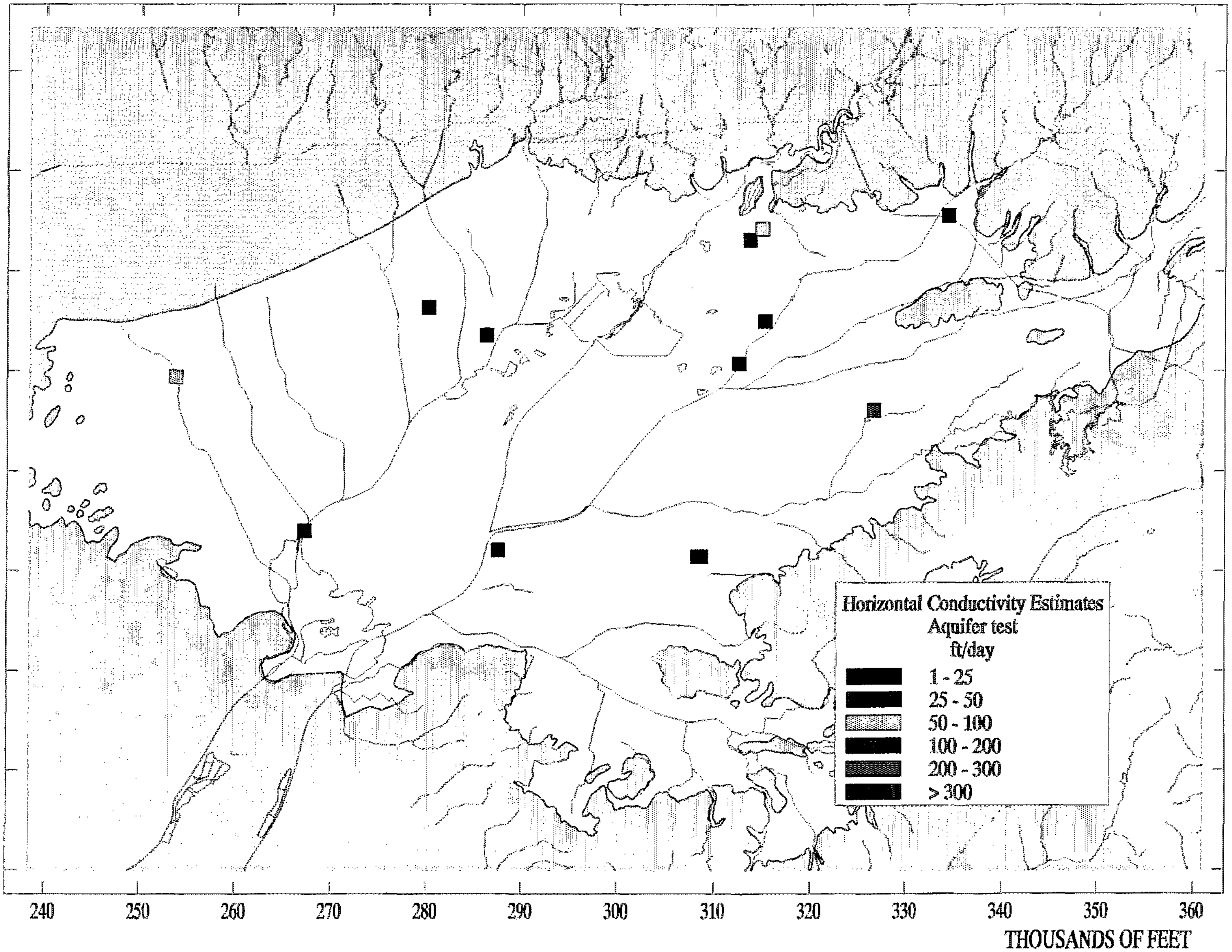



| FIGURE 5-12 | Horizontal Conductivity Estimates<br>Based on Aquifer Tests<br>Source: EPA San Gabriel Basin GIS<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|

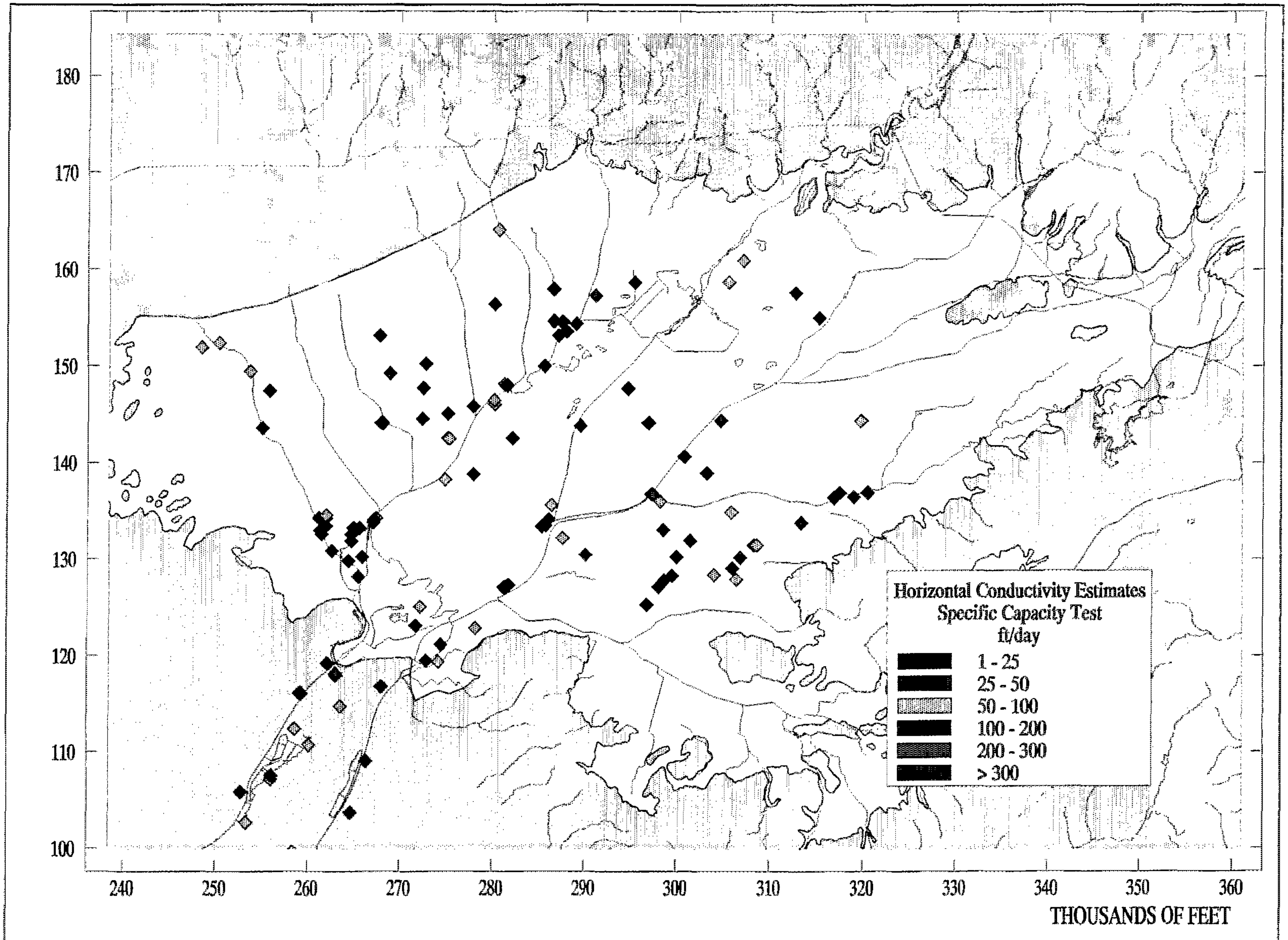
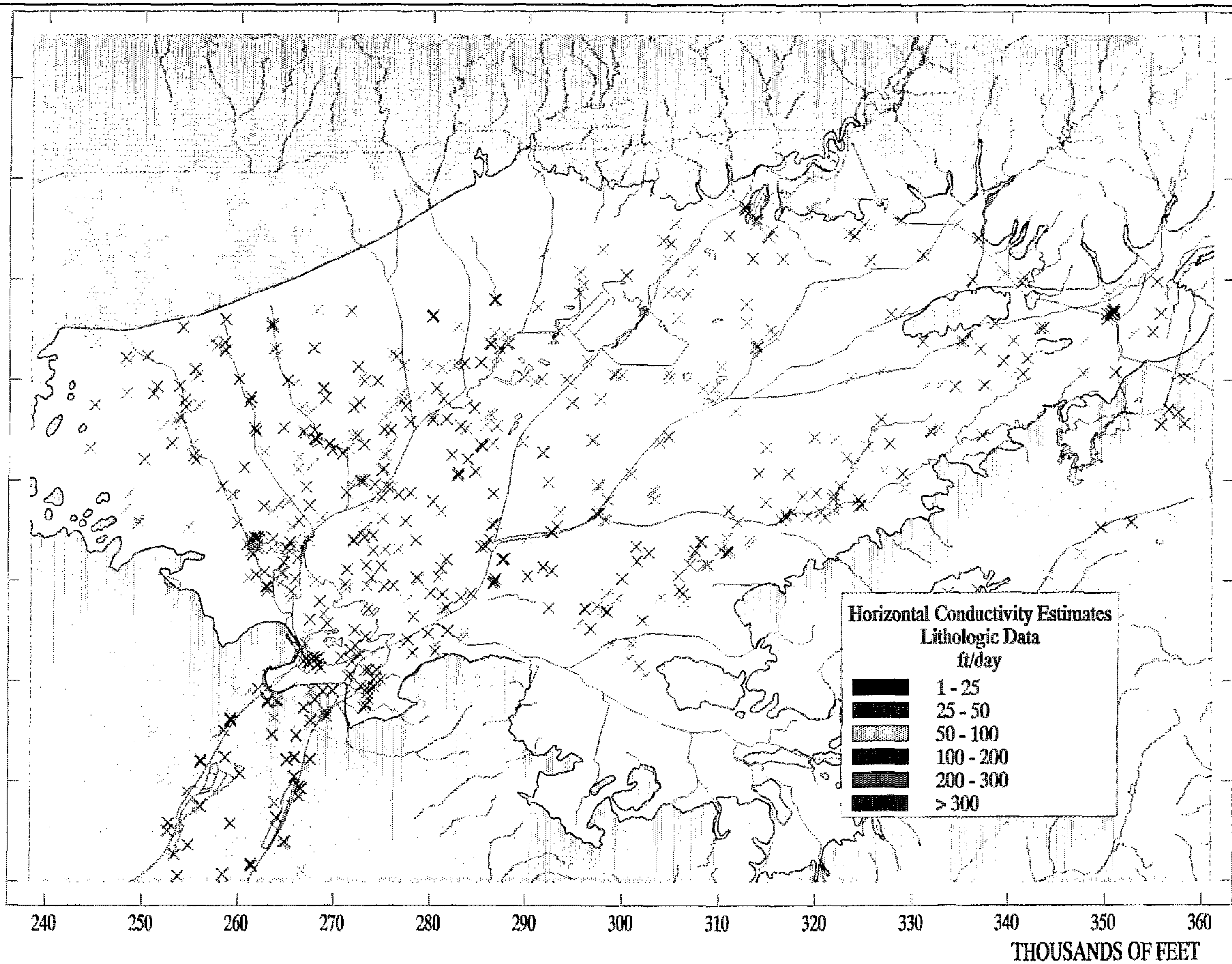



FIGURE 5-13

Horizontal Conductivity Estimates
Based on Specific Capacity Tests
Source: EPA San Gabriel Basin GIS
Baldwin Park Operable Unit Pre-Remedial Design

CDM
environmental engineers, scientists, planners, & management consultants




| FIGURE 5-14 | Horizontal Conductivity Estimates<br>Based on Lithologic Data<br>Source: EPA San Gabriel Basin GIS<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|

The Duarte Fault was simulated with a very low horizontal hydraulic conductivity, ranging from 0.15 to 1 feet/day, except for a small section in the area of the San Gabriel River, which is identified in Figure 5-15. This section, shown on Figure 5-16, located in the upper two active layers of the model, was simulated with a horizontal conductivity of 125 feet/day, and represents a "notch" in the fault, which permits flux to pass from the San Gabriel Canyon into the main portion of the basin, provided the water level north of the fault is above an elevation of 375 feet MSL.

#### *5.2.5.2 Vertical Anisotropy*

The vertical anisotropy ratio (horizontal conductivity/vertical conductivity) is used to represent the interbedding of silts and clays within the sand and gravel deposits of the basin. Anisotropy ratios of 10, 30 and 100 are used throughout the basin. Areas in the center of the basin which are characterized primarily by gravel deposits are modeled with a vertical anisotropy ratio of 30. Use of this anisotropy ratio yielded a variation in head with depth in the central area of the basin, which closely reflected the observed variation at the multi-port monitoring wells. This data, as reported in Section 4, indicated that the vertical difference in head is typically less than one foot over the full range of the monitoring wells. Areas which are known to accept large volumes of applied recharge at spreading facilities are modeled with a ratio of 10. Other areas are modeled with a nominal ratio of 100. The vertical anisotropy ratio for the model is presented on Figure 5-17. The vertical anisotropy ratio is not varied by layer.

#### *5.2.5.3 Specific Yield and Storativity*

The modeled specific yield values for each model layer are presented on Figures 5-18. The modeled specific yield is set at values ranging from 0.05 to 0.12. The majority of the basin is modeled with a specific yield of 0.10 or 0.12. Only those areas located some distance from either the San Gabriel River, or the Rio Honda are modeled with a specific yield of 0.05. These are areas of low-energy deposition, and are comprised primarily of interbedded sands and clays. A constant value of 0.000001 for storativity was used for all elements throughout the basin.

### *5.2.6 Steady-State Calibration*

The regional groundwater flow model was calibrated to observed water levels throughout the San Gabriel Basin. Water level data was taken from the CH2M Hill/EPA San Gabriel Basin GIS, the LA County water level database, and water level data provided by the Main San Gabriel Basin Watermaster. In the development of the regional model the initial estimates of aquifer properties were varied systematically throughout the basin, until the model could better reproduce the observed variation in piezometric heads across the basin. The properties which were varied include the horizontal hydraulic conductivity, and the vertical anisotropy ratio.

#### *5.2.6.1 Steady-State Calibration Process*

Calibration of the model took place in two phases. Heads in the San Gabriel Basin vary significantly during normal climatic conditions. A time history of the head at the Baldwin Park Key Well from January, 1980 through October, 1995 is shown on Figure 5-19. As shown in this figure, the water elevation at the Key Well fluctuated from a high of approximately 295 feet MSL through a low of approximately 200 feet MSL during this period. Such variation in head is typical of the aquifer

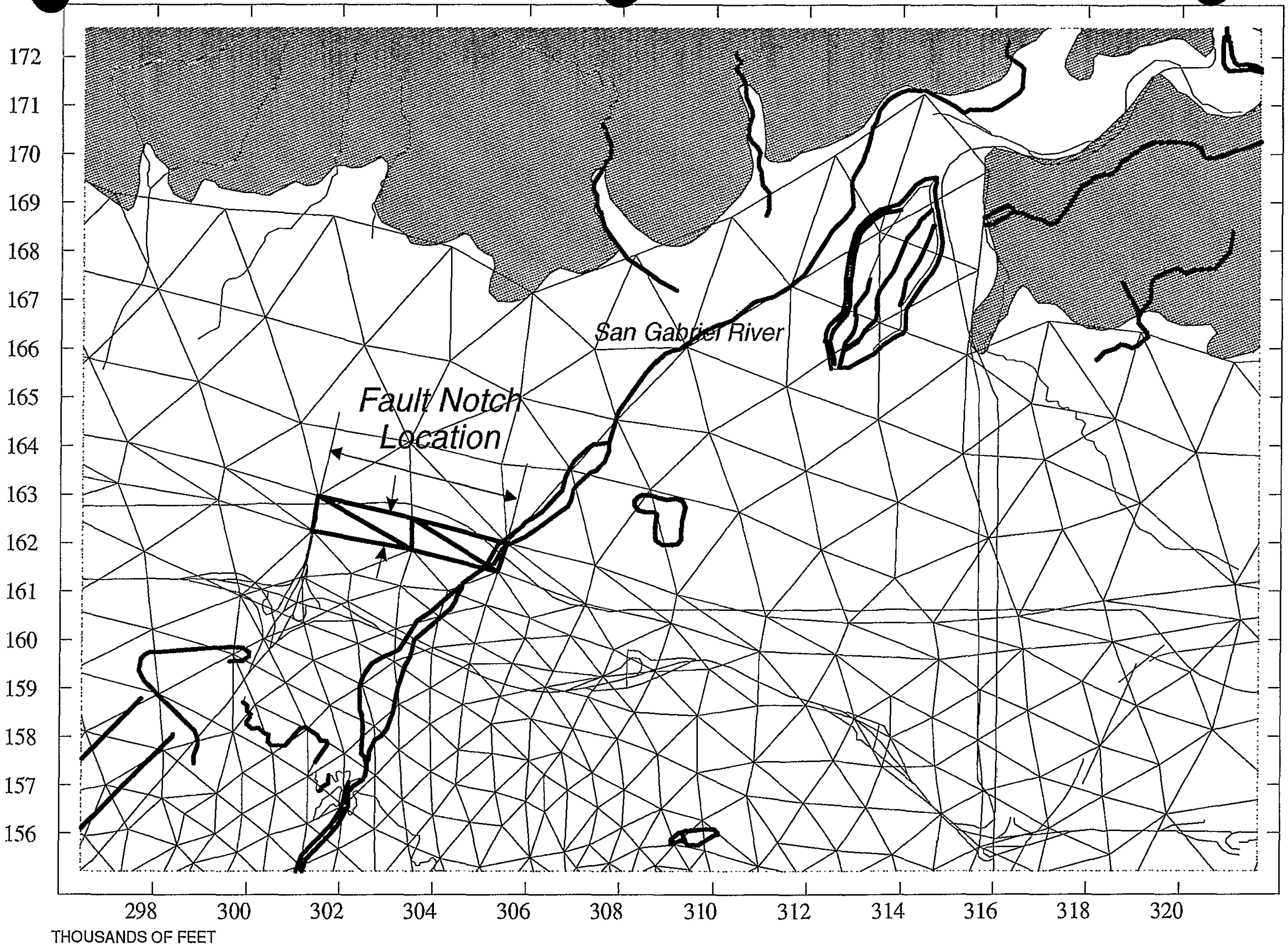



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Figure 5-15
Location of Duarte Fault Notch

Baldwin Park Operable Unit Pre-Remedial Design

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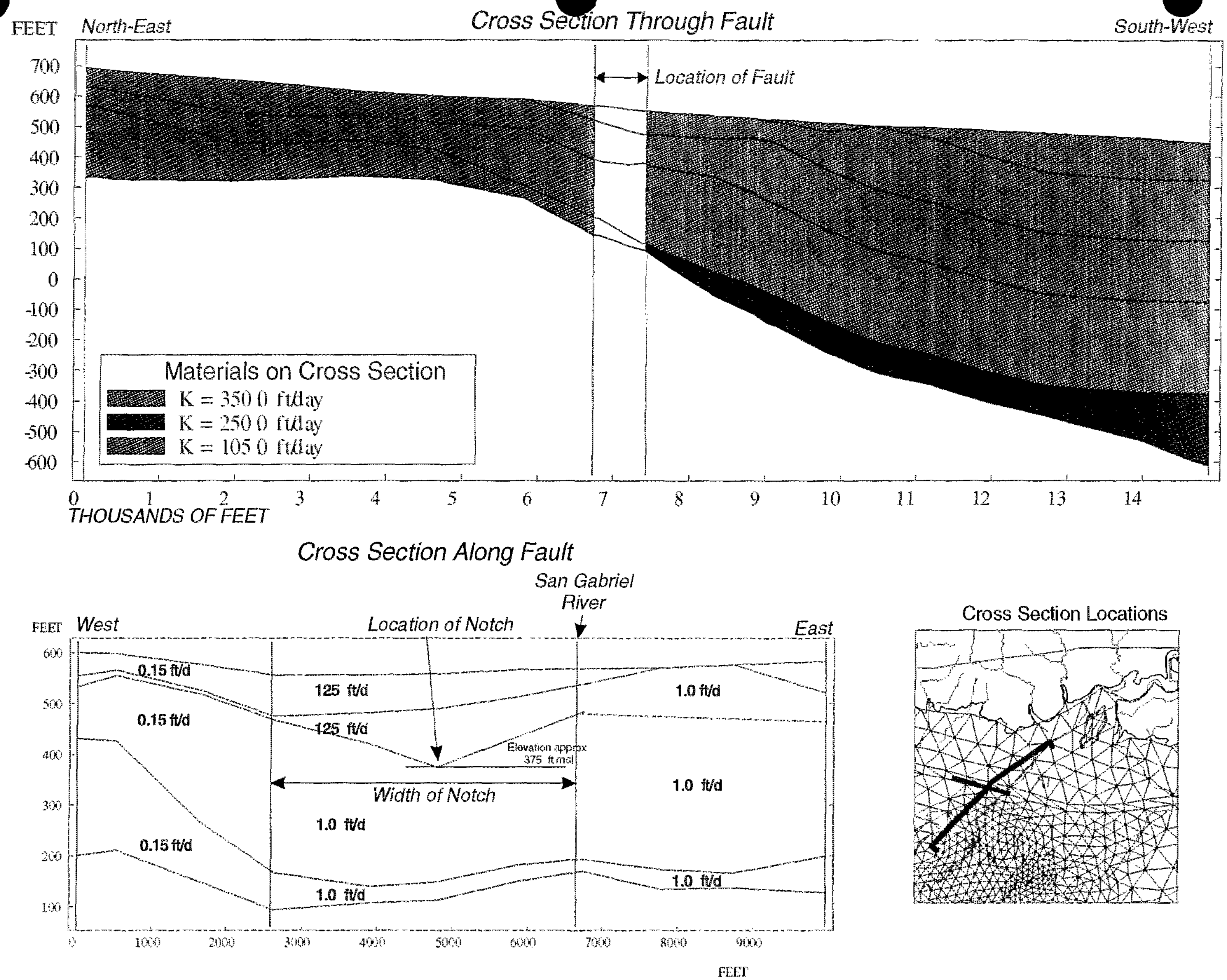


Figure 5-16
Cross Sections Through Duarte Fault at Notch Location

Baldwin Park Operable Unit Pre-Remedial Design

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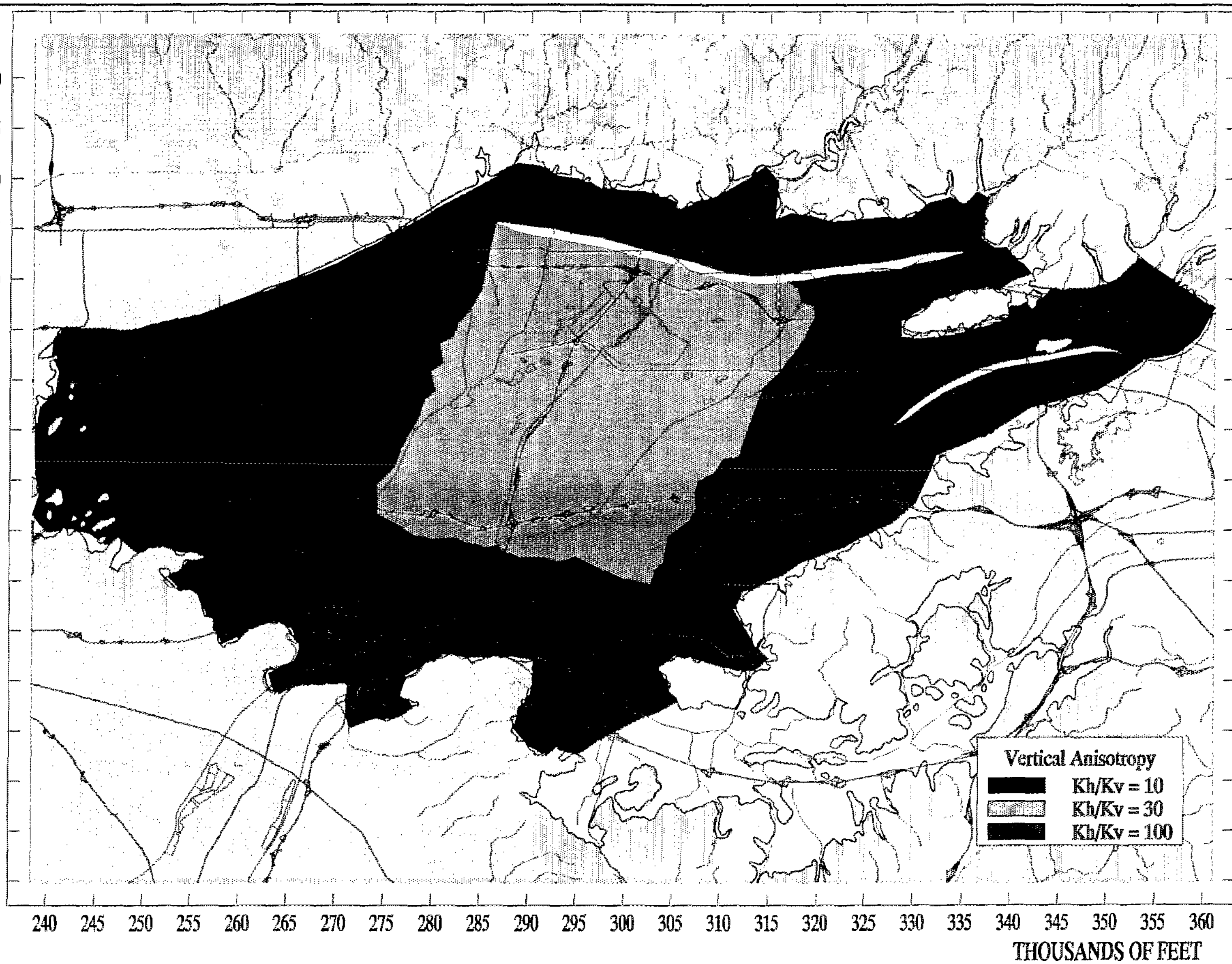
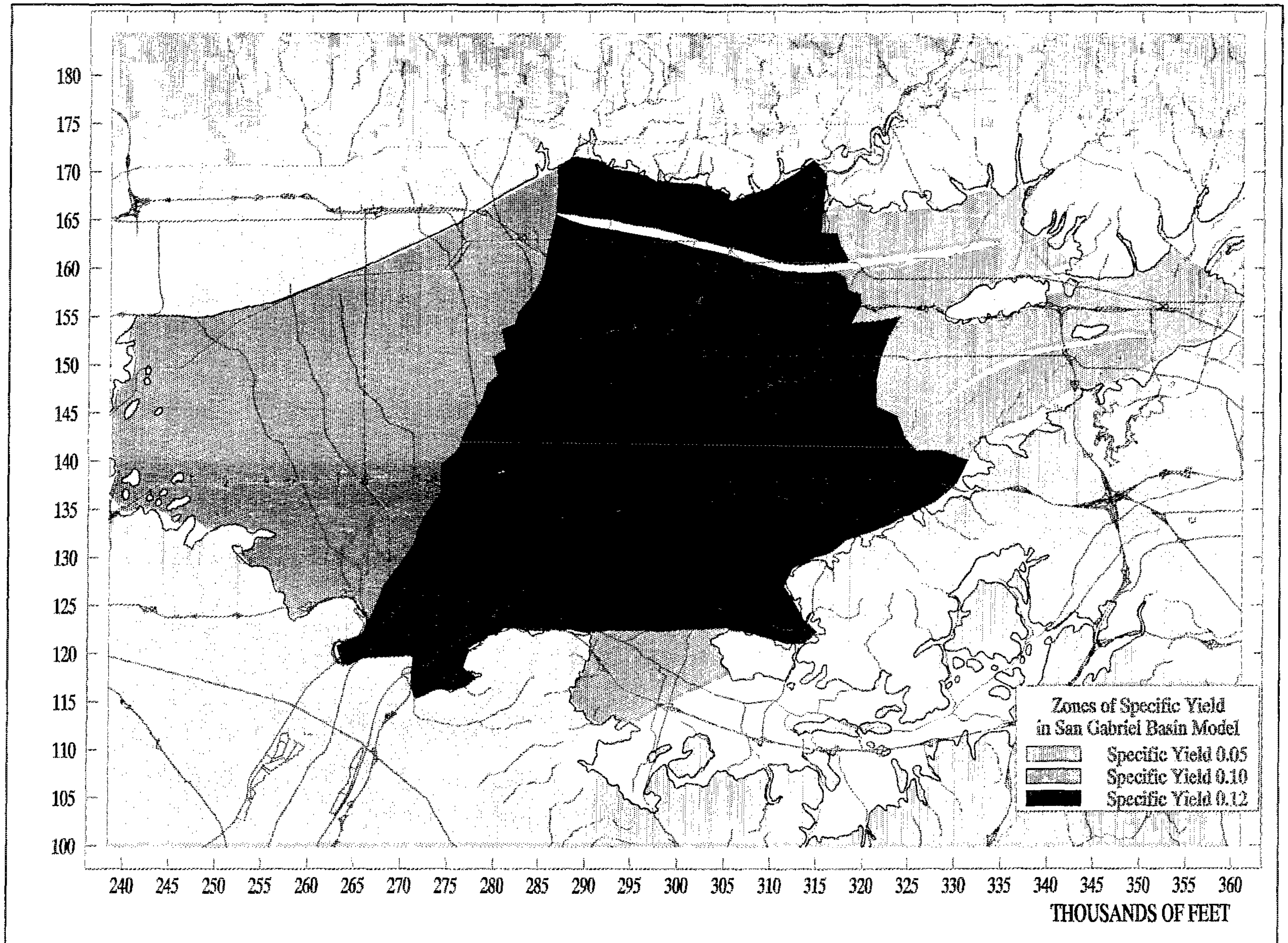
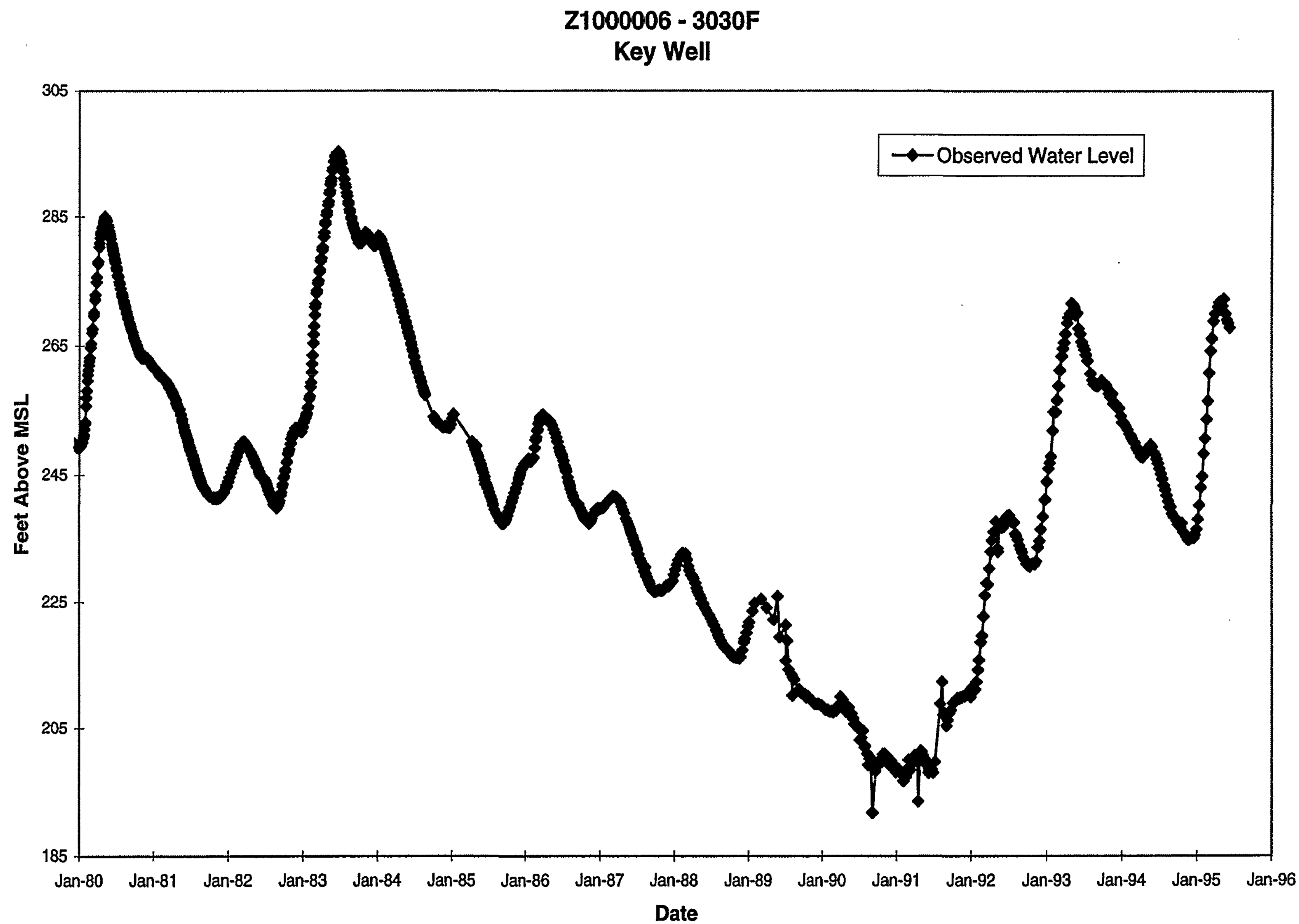



| | | |
|---|---|---|
| FIGURE 5-17 | Model Hydraulic Properties - Vertical Anisotropy<br>All Model Layers<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |




| FIGURE 5-18 | Model Hydraulic Properties - Specific Yield<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|




**CDM** Camp Dresser & McKee
SANGAB/th29.xls

Figure 5-19

response in the basin to wet and dry climatic cycles, including the impact of pumping and recharge operations in the basin.

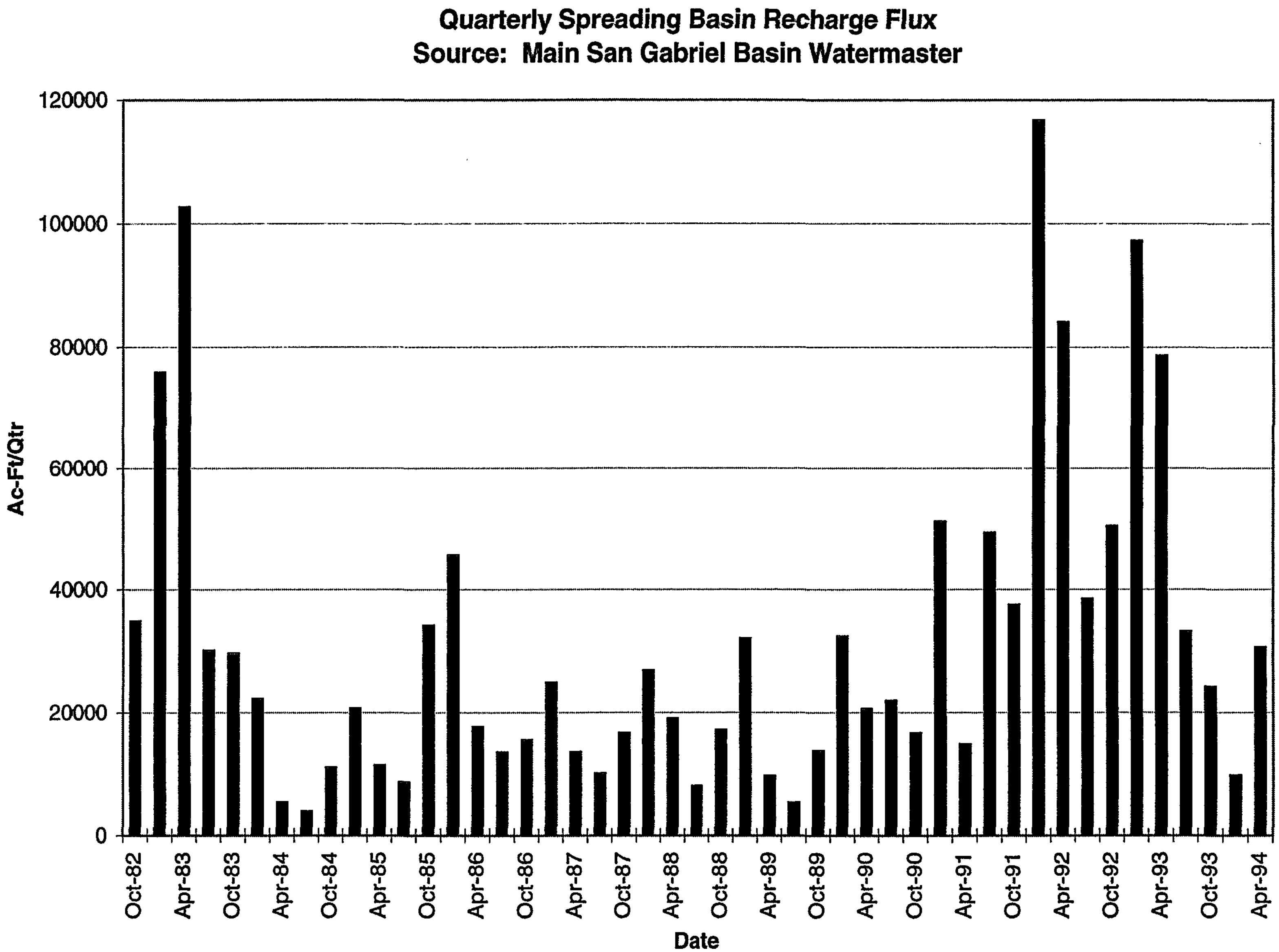
The water level at the Key Well, and water levels throughout the central portion of the basin, are impacted by the amount of recharge to the basin; both recharge from precipitation, and recharge applied at spreading facilities and along the San Gabriel River channel. These recharge amounts fluctuate with the climatic cycles. Therefore wet climatic periods will produce greater amounts of recharge and higher heads in the basin, while dry periods will produce less recharge and lower heads in the basin. Recharge variations during this period are shown on Figure 5-20.

Since the period of October, 1981 through September, 1982 was one of relatively small (generally less than 5 feet) variation in head in the basin, this period was selected for an initial "pseudo" steady state calibration; the first phase of calibration. Applied recharge and pumping fluxes were averaged over this 12-month period. Boundary fluxes were specified as described in Section 4; these values are the 27-year long term averages (CDWR, Bulletin 104) and were not modified specifically for the 1981-1982 Water Year. The model simulated heads were compared to the average of the observed water levels at each of the approximately 150 wells where data were available for the 1981-1982 Water Year.

The average observed water levels for the 1981- 1982 Water Year are plotted on Figure 5-21. Observed water levels in the center of the basin are approximately 250 feet above mean sea level, and the gradient in this area is quite flat. North of the Duarte Fault, the water levels are generally well above 500 feet MSL. The highest observed water levels occur at the eastern edge of the basin, in the area of San Dimas, where heads of over 1000 feet MSL are measured. This eastern sector also displays some of the steepest gradients in the groundwater flow system. Heads at the Whittier Narrows area were about 195 feet MSL during the year.

During the calibration process the horizontal hydraulic conductivities in the model were varied until the model generally replicated the average observed water levels for the 1981-1982 Water Year. Typical ranges over which the model properties were varied were:

- In areas close to the basin boundaries, hydraulic conductivities ranging from 5 to 50 feet/day were used.
- In the region just upgradient of Whittier Narrows, conductivities in layer 1 were varied from 10 to 150 feet/day. In the upper layers in this area modeled conductivities were simulated at 100 to 300 feet/day.
- The central portion of the basin, south of the Duarte Fault, was simulated at the highest conductivities in the basin. This region encompasses the San Gabriel River deposits. Hydraulic conductivities were modeled at values ranging from 200 to 500 feet/day.
- North of the Duarte Fault through the San Gabriel Canyon, conductivities from 50 to 150 feet/day were simulated.




**CDM** Camp Dresser & McKee
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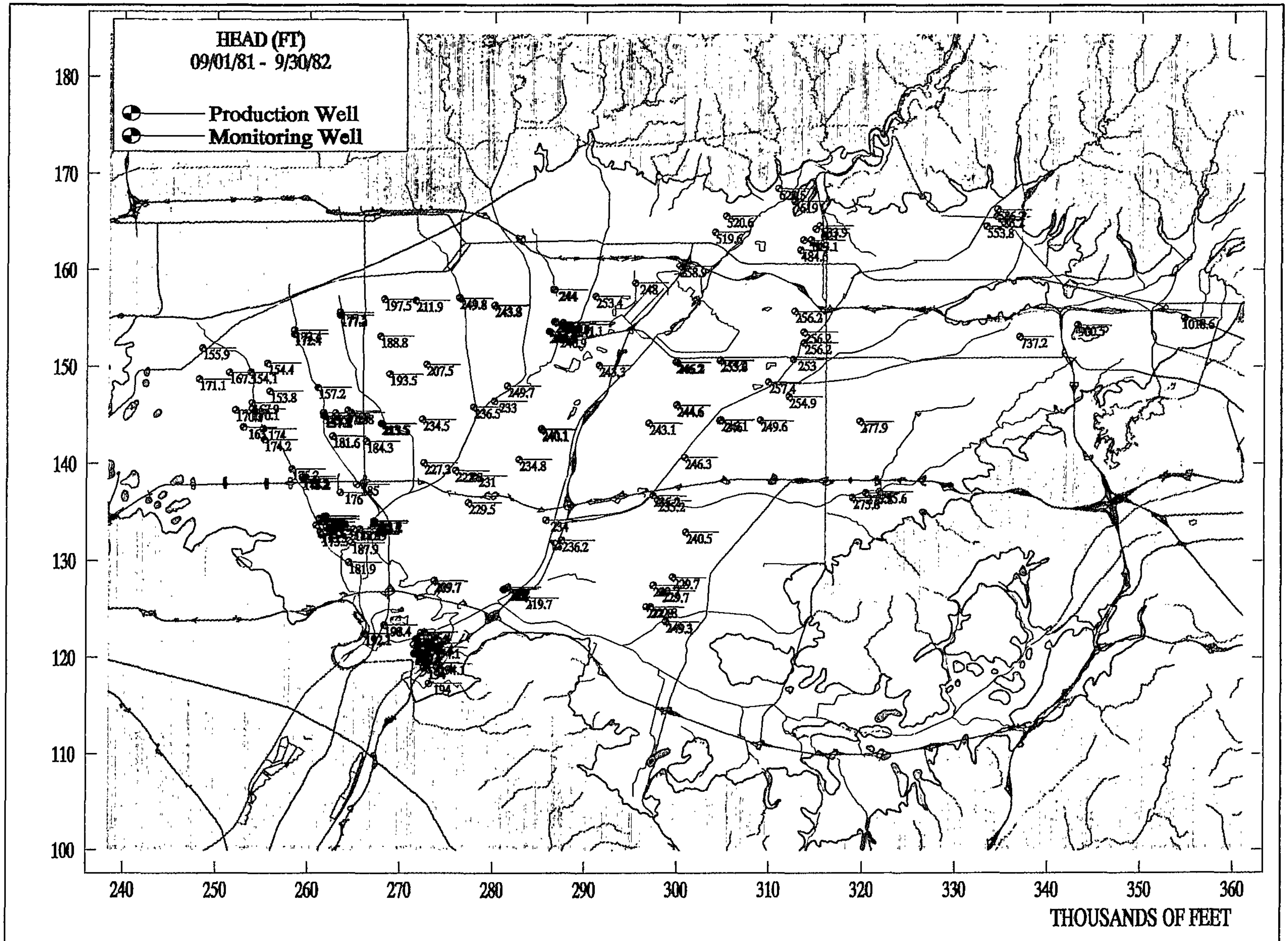
**Figure 5-20**




| FIGURE 5-21 | Observed Water Levels 1981 - 1982 Water Year<br>Source: EPA San Gabriel Basin GIS<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|

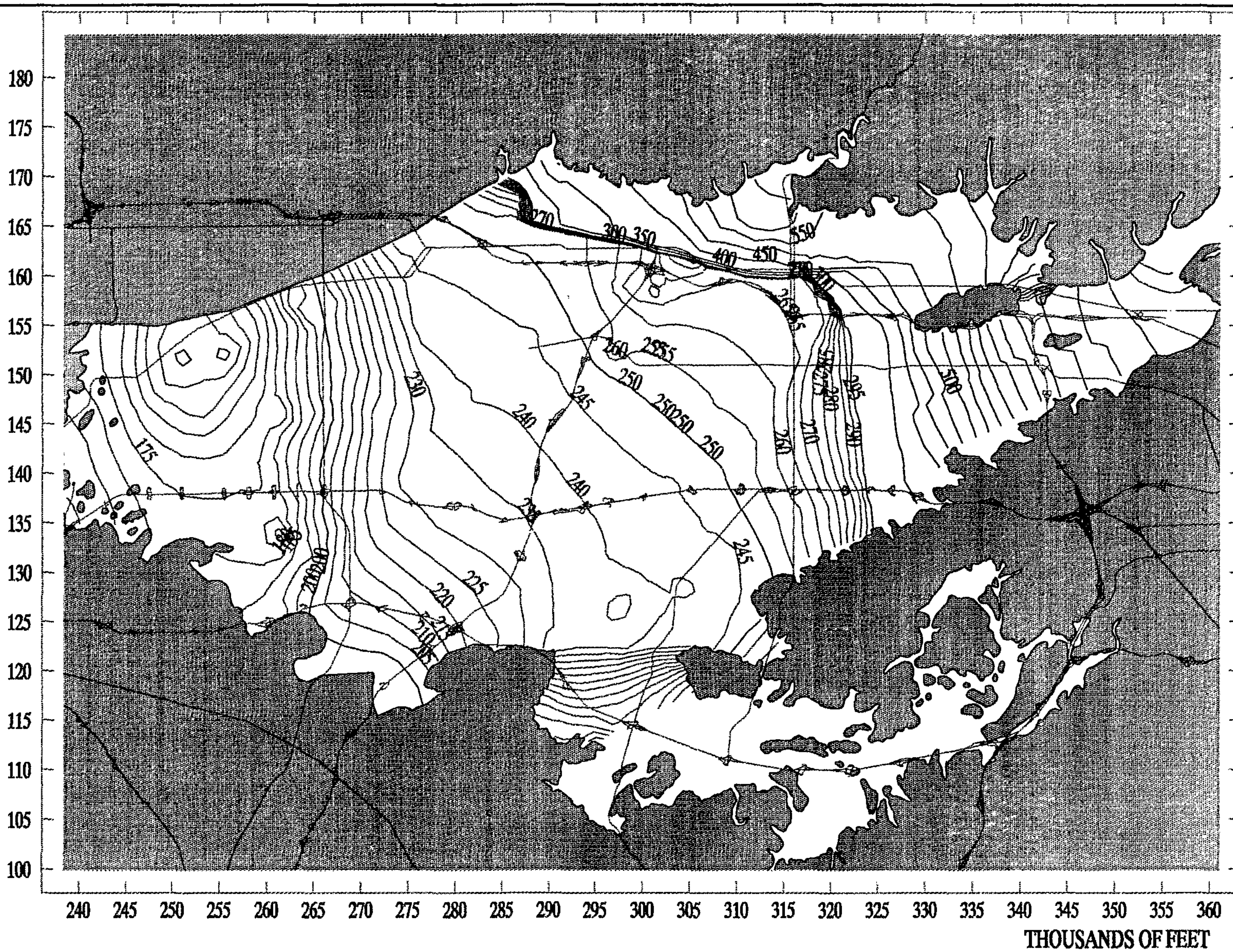
- The two faults, Duarte and Lone Hill-Way Hill, which were explicitly modeled with two-dimensional elements were simulated with horizontal hydraulic conductivities ranging from 0.1 to 5 feet/day. The one exception to this is the small section of the Duarte Fault which serves as an opening for flux to pass into the central portion of the basin. Conductivities in this "notch" were varied from 50 to 150 feet/day.

#### *5.2.6.2 Steady-State Calibration Results*

Figure 5-22 depicts contours of the simulated water table for the "pseudo" steady-state calibration period. These contours depict the direction of groundwater flow which in the center of the basin is generally toward the southwest, toward Whittier Narrows. Flow in the eastern section of the basin is predominately to the west, and feeds the central section of the basin. In the western section of the basin flow is generally toward the pumping centers in Alhambra and Monterey Park. These flow directions agree well with observed behavior in the basin.

A comparison between the simulated and observed water levels is presented on Figures 5-23 and 5-24. Figure 5-23 presents the numerical differences between observed and simulated water levels at 147 wells in the basin. These 147 wells are all the wells where consistent data for the 1981-1982 Water Year were available. Table 5-3 presents the comparison between observed and simulated heads for each of these wells in tabular form. As shown in the table, the mean difference between simulated and observed heads is 1.9 feet and the standard deviation is 7.3 feet. Calibration in the central portion of the basin (including the BPOU area) is very good; the differences in observed and calculated head in this area are generally no more than 5 feet at any well. This five foot difference is small relative to annual head fluctuations of up to 70 feet in this area of the basin. Figure 5-24 presents a symbol plot of ranges of differences between observed and simulated water levels. A review of this plot indicates that there is little spatial bias in the variation of the model results from the observed data.

The mass balance of the steady state calibration simulation is presented in Table 5-4. Note that the values shown in the table for boundary fluxes across the Raymond Fault, from the San Gabriel Mountains, and from the Chino Basin, are specified as input to the model. The fluxes from Puente Valley and across Whittier Narrows are computed by the model. At the boundary with Puente Valley, the model estimates 998 Ac-Ft flowing into the main San Gabriel Basin from the Puente Basin. The simulated discharge from the basin at Whittier Narrows was 13,457 Ac-Ft during the 1981-1982 Water Year.




| | | |
|---|---|---|
| FIGURE 5-22 | Simulated Steady State Water Level Contours<br>1981 - 1982 Water Year<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |

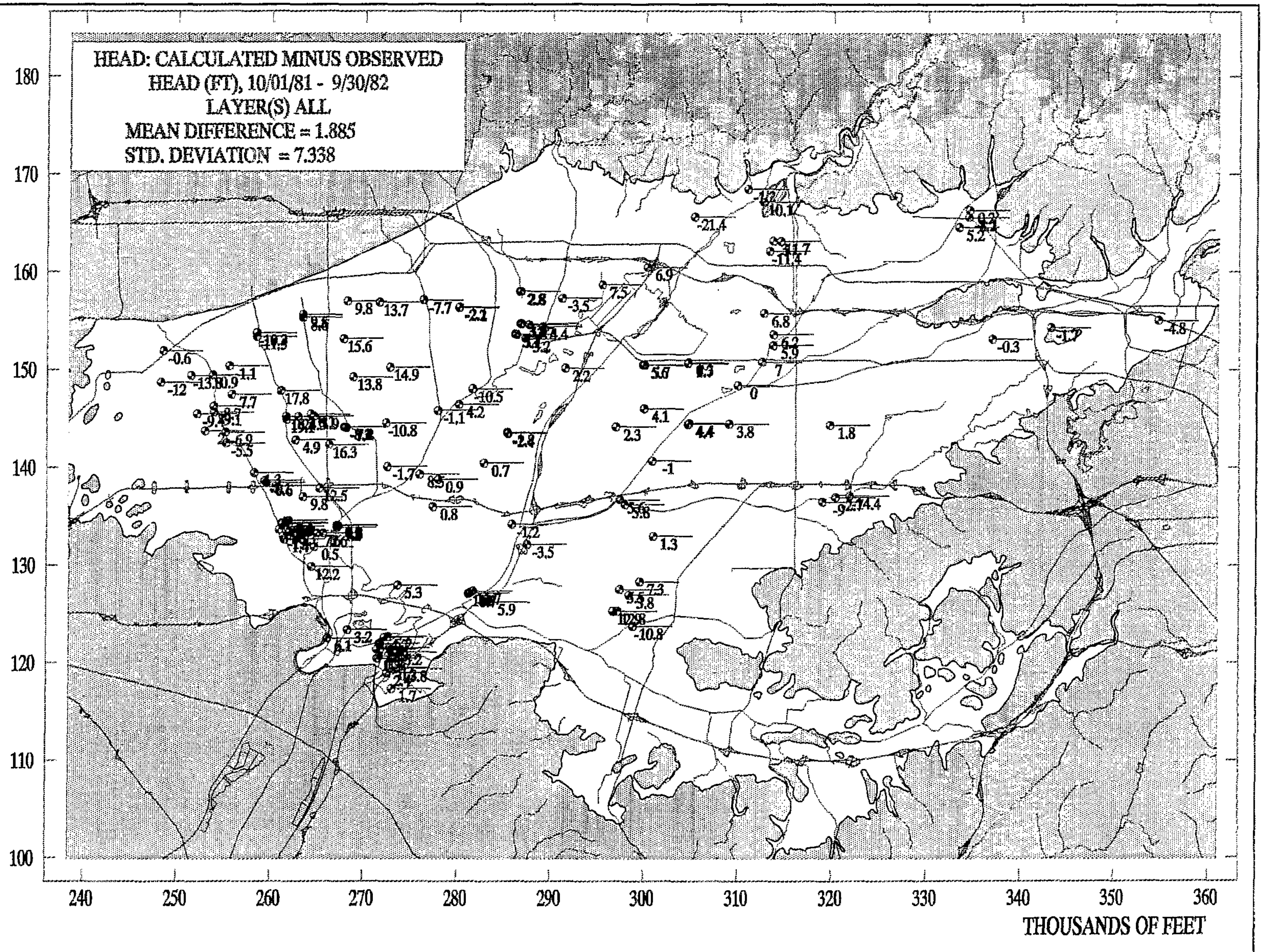
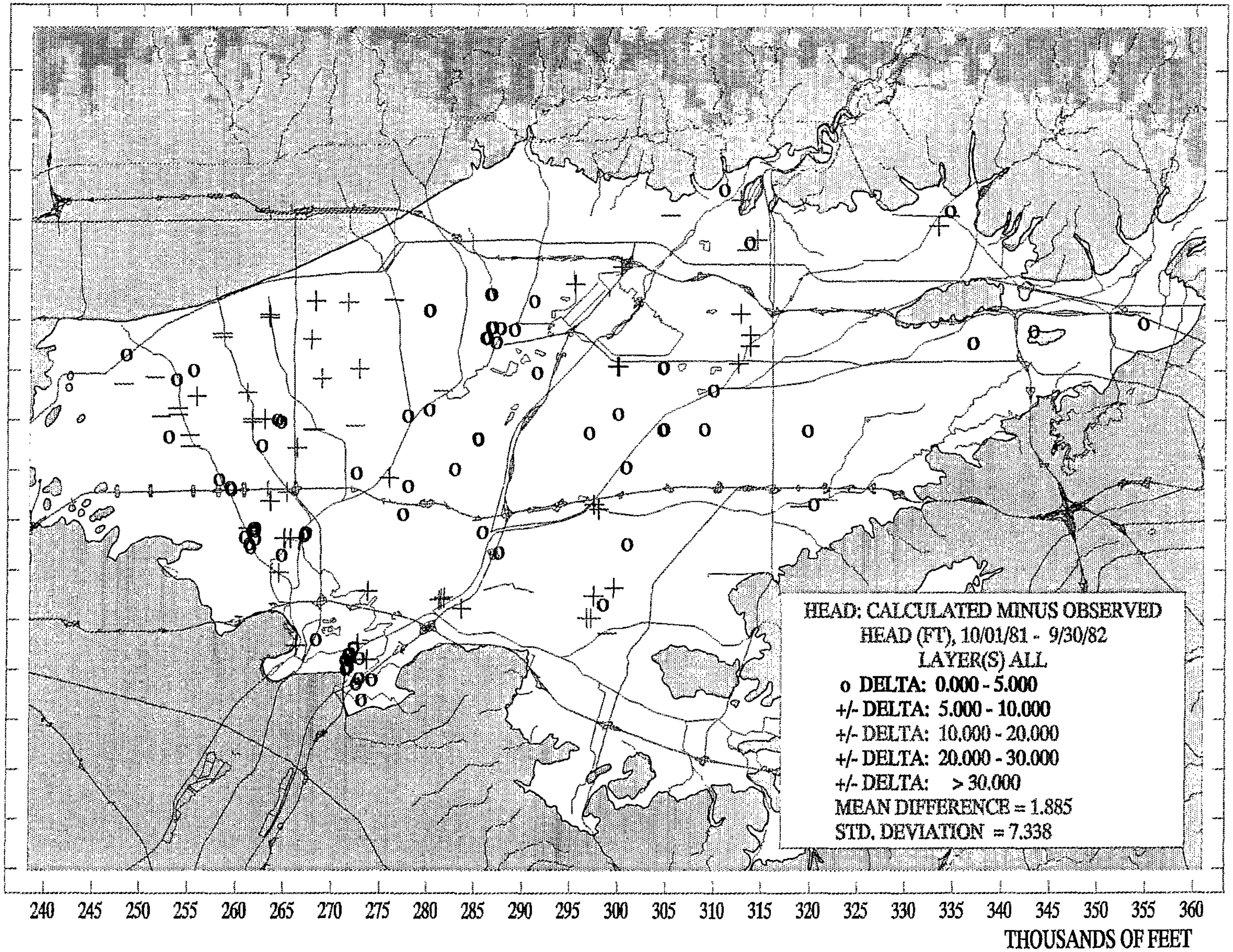



FIGURE
5-23

Calculated Minus Observed Water Levels
Steady State Calibration 1981 - 1982 Water Year

Baldwin Park Operable Unit Pre-Remedial Design

CDM
environmental engineers, scientists, planners, & management consultants




| FIGURE 5-24 | Calculated Minus Observed Water Levels<br>Steady State Calibration 1981 - 1982 Water Year<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|

**Table 5-3**
Steady State Calibration Results
1981 - 1982 Water Year

| Well ID | Head (ft) Simulated | Observed | Difference |
|---|---|---|---|
| 01900094 | 195.739 | 194.000 | 1.739 |
| 01900358 | 623.381 | 624.544 | -1.163 |
| 01901200 | 1013.839 | 1018.600 | -4.761 |
| 01901526 | 586.375 | 586.175 | 0.200 |
| 01901679 | 155.323 | 155.900 | -0.577 |
| 01902271 | 736.930 | 737.200 | -0.270 |
| 01902272 | 898.771 | 900.500 | -1.729 |
| 01902372 | 195.476 | 187.875 | 7.601 |
| 01902458 | 629.015 | 618.963 | 10.052 |
| 08000034 | 473.260 | 484.650 | -11.390 |
| 11900497 | 499.205 | 520.576 | -21.371 |
| 01900011 | 153.699 | 167.500 | -13.801 |
| 01900012 | 164.994 | 163.000 | 1.994 |
| 01900018 | 159.060 | 171.073 | -12.013 |
| 01900354 | 265.801 | 258.876 | 6.925 |
| 01900455 | 179.871 | 176.007 | 3.863 |
| 01900828 | 558.973 | 553.750 | 5.223 |
| 01900920 | 207.295 | 193.500 | 13.795 |
| 01901430 | 199.302 | 194.067 | 5.236 |
| 01901432 | 196.151 | 196.383 | -0.232 |
| 01901523 | 578.018 | 586.175 | -8.157 |
| 01901619 | 266.784 | 275.750 | -8.966 |
| 01901620 | 273.062 | 275.750 | -2.688 |
| 01901685 | 279.708 | 277.889 | 1.819 |
| 01901747 | 198.971 | 196.383 | 2.588 |
| 01902024 | 206.282 | 213.468 | -7.185 |
| 01902035 | 206.071 | 213.468 | -7.396 |
| 01902115 | 524.853 | 513.123 | 11.730 |
| 01902116 | 519.168 | 516.041 | 3.127 |
| 01902424 | 223.734 | 234.500 | -10.766 |
| 01902792 | 185.882 | 177.300 | 8.582 |
| 08000039 | 245.464 | 243.143 | 2.322 |
| 08000048 | 204.450 | 188.800 | 15.650 |
| 08000051 | 281.218 | 295.600 | -14.382 |
| 08000135 | 199.799 | 196.383 | 3.416 |
| 08000136 | 198.666 | 196.383 | 2.282 |
| 11900095 | 197.854 | 194.067 | 3.787 |
| 11901508 | 207.326 | 197.500 | 9.826 |
| 18000102 | 238.279 | 240.050 | -1.771 |
| 91901439 | 235.194 | 229.658 | 5.537 |
| 01900010 | 159.118 | 167.850 | -8.732 |
| 01900013 | 160.703 | 170.100 | -9.397 |
| 01900014 | 168.787 | 174.250 | -5.463 |
| 01900015 | 167.098 | 174.000 | -6.902 |
| 01900016 | 173.866 | 175.167 | -1.301 |
| 01900017 | 160.950 | 172.450 | -11.500 |
| 01900026 | 186.782 | 177.300 | 9.482 |
| 01900027 | 251.914 | 246.183 | 5.731 |
| 01900028 | 251.785 | 246.183 | 5.602 |
| 01900034 | 255.481 | 255.192 | 0.290 |

**Table 5-3**
Steady State Calibration Results
1981 - 1982 Water Year

| Well ID | Head (ft) Simulated | Observed | Difference |
|---|---|---|---|
| 01900035 | 245.236 | 246.267 | -1.031 |
| 01900355 | 255.535 | 248.022 | 7.513 |
| 01900420 | 245.516 | 241.073 | 4.443 |
| 01900457 | 171.920 | 173.281 | -1.361 |
| 01900458 | 174.708 | 173.281 | 1.427 |
| 01900512 | 168.291 | 176.007 | -7.716 |
| 01900514 | 174.093 | 175.167 | -1.073 |
| 01900831 | 263.013 | 256.163 | 6.850 |
| 01900885 | 250.527 | 246.078 | 4.449 |
| 01900923 | 197.471 | 185.000 | 12.471 |
| 01900926 | 188.120 | 188.000 | 0.120 |
| 01900927 | 189.913 | 188.000 | 1.913 |
| 01901013 | 243.983 | 240.880 | 3.104 |
| 01901014 | 243.933 | 240.880 | 3.053 |
| 01901015 | 225.586 | 211.900 | 13.686 |
| 01901429 | 199.426 | 196.383 | 3.043 |
| 01901441 | 225.599 | 227.300 | -1.701 |
| 01901672 | 155.004 | 154.100 | 0.904 |
| 01901681 | 153.298 | 154.400 | -1.102 |
| 01901699 | 231.903 | 231.000 | 0.903 |
| 01901745 | 199.693 | 196.383 | 3.310 |
| 01901748 | 197.148 | 196.383 | 0.764 |
| 01902019 | 244.705 | 240.880 | 3.826 |
| 01902027 | 235.400 | 236.467 | -1.066 |
| 01902034 | 239.250 | 249.704 | -10.454 |
| 01902077 | 241.638 | 243.800 | -2.162 |
| 01902078 | 241.682 | 243.800 | -2.118 |
| 01902117 | 262.385 | 256.163 | 6.221 |
| 01902373 | 195.429 | 187.875 | 7.554 |
| 01902461 | 246.755 | 244.000 | 2.755 |
| 01902666 | 194.017 | 181.850 | 12.167 |
| 01902786 | 175.006 | 157.222 | 17.784 |
| 01902789 | 162.132 | 172.450 | -10.318 |
| 01902791 | 222.396 | 207.500 | 14.896 |
| 01902818 | 169.186 | 176.007 | -6.821 |
| 01903014 | 161.481 | 153.800 | 7.681 |
| 01903033 | 188.383 | 187.875 | 0.508 |
| 01903097 | 160.957 | 170.100 | -9.143 |
| 08000060 | 255.366 | 253.642 | 1.724 |
| 08000067 | 175.394 | 157.222 | 18.172 |
| 08000071 | 201.070 | 196.383 | 4.687 |
| 08000073 | 205.174 | 213.468 | -8.293 |
| 21900749 | 237.194 | 233.000 | 4.194 |
| 31900747 | 203.629 | 202.475 | 1.154 |
| 71903093 | 240.867 | 235.225 | 5.642 |
| 91901440 | 235.557 | 222.750 | 12.807 |
| 98000068 | 235.665 | 222.750 | 12.915 |
| 01900117 | 257.344 | 257.378 | -0.033 |
| 01900356 | 249.917 | 253.450 | -3.533 |
| 01900417 | 244.059 | 240.880 | 3.179 |

**Table 5-3**
Steady State Calibration Results
1981 - 1982 Water Year

| Well ID | Head (ft) | | |
|---|---|---|---|
| | Simulated | Observed | Difference |
| 01900418 | 244.068 | 240.880 | 3.188 |
| 01900419 | 244.543 | 240.880 | 3.664 |
| 01900453 | 173.379 | 176.007 | -2.628 |
| 01900454 | 174.542 | 176.007 | -1.465 |
| 01900456 | 172.997 | 173.281 | -0.284 |
| 01900510 | 168.675 | 173.281 | -4.606 |
| 01900511 | 167.580 | 176.007 | -8.428 |
| 01900513 | 171.468 | 176.007 | -4.540 |
| 01900515 | 174.599 | 175.167 | -0.568 |
| 01900725 | 185.781 | 176.007 | 9.773 |
| 01900881 | 262.041 | 256.163 | 5.878 |
| 01900883 | 250.432 | 246.034 | 4.399 |
| 01900918 | 200.599 | 184.300 | 16.299 |
| 01900921 | 181.758 | 157.222 | 24.536 |
| 01901460 | 241.024 | 235.225 | 5.799 |
| 01901493 | 245.530 | 243.300 | 2.230 |
| 01901521 | 235.520 | 234.777 | 0.744 |
| 01901525 | 260.014 | 253.038 | 6.976 |
| 01901596 | 233.446 | 229.658 | 3.789 |
| 01901623 | 236.972 | 229.658 | 7.314 |
| 01901627 | 232.803 | 234.035 | -1.232 |
| 01901669 | 176.280 | 157.222 | 19.058 |
| 01901693 | 231.228 | 222.750 | 8.478 |
| 01901694 | 230.339 | 229.500 | 0.839 |
| 01901749 | 201.577 | 196.383 | 5.194 |
| 01902017 | 244.724 | 240.880 | 3.844 |
| 01902018 | 244.751 | 240.880 | 3.871 |
| 01902030 | 246.806 | 244.000 | 2.806 |
| 01902113 | 253.428 | 249.633 | 3.794 |
| 01903084 | 225.573 | 219.700 | 5.873 |
| 11900729 | 237.685 | 240.050 | -2.365 |
| 31900736 | 203.983 | 203.225 | 0.758 |
| 31900746 | 203.303 | 202.475 | 0.828 |
| 41900739 | 223.652 | 212.000 | 11.652 |
| 41900745 | 223.020 | 212.000 | 11.020 |
| 41902713 | 222.665 | 212.000 | 10.665 |
| 61900718 | 232.652 | 236.183 | -3.531 |
| Z1000001 | 186.449 | 181.560 | 4.889 |
| Z1000002 | 196.771 | 196.426 | 0.345 |
| Z1000006 | 248.695 | 244.552 | 4.142 |
| Z1000007 | 238.507 | 249.258 | -10.751 |
| Z1000009 | 242.094 | 249.750 | -7.656 |
| Z1000086 | 196.353 | 194.000 | 2.353 |
| 01902761 | 241.794 | 240.533 | 1.260 |
| Z1000003 | 214.967 | 209.700 | 5.267 |
| Z1000075 | 198.139 | 192.083 | 6.056 |
| Z1000093 | 201.572 | 198.400 | 3.172 |

| Table 5-4<br>1981-1982 Steady State Calibration Water Balance | | |
|---|---|---|
| *Major Flux Components* | *Fluxes in Acre-feet per Year* | |
| | *Net Inflow* | *Net Outflow* |
| *Boundary Fluxes* | | |
| Chino/San Dimas | 6,900 | |
| Raymond Fault | 6,200 | |
| San Gabriel Mountains | 5,000 | |
| Puente Valley* | 998 | |
| Whittier Narrows* | | 13,457 |
| *Recharge Fluxes* | | |
| Precipitation and Applied Water | 55,429 | |
| Spreading Basins | 118,330 | |
| *Pumping Fluxes* | | 179,037 |
| **Net Model Flows** | 192,857 | 192,494 |
| **Net Model Water Balance Difference** | 0.19% | |

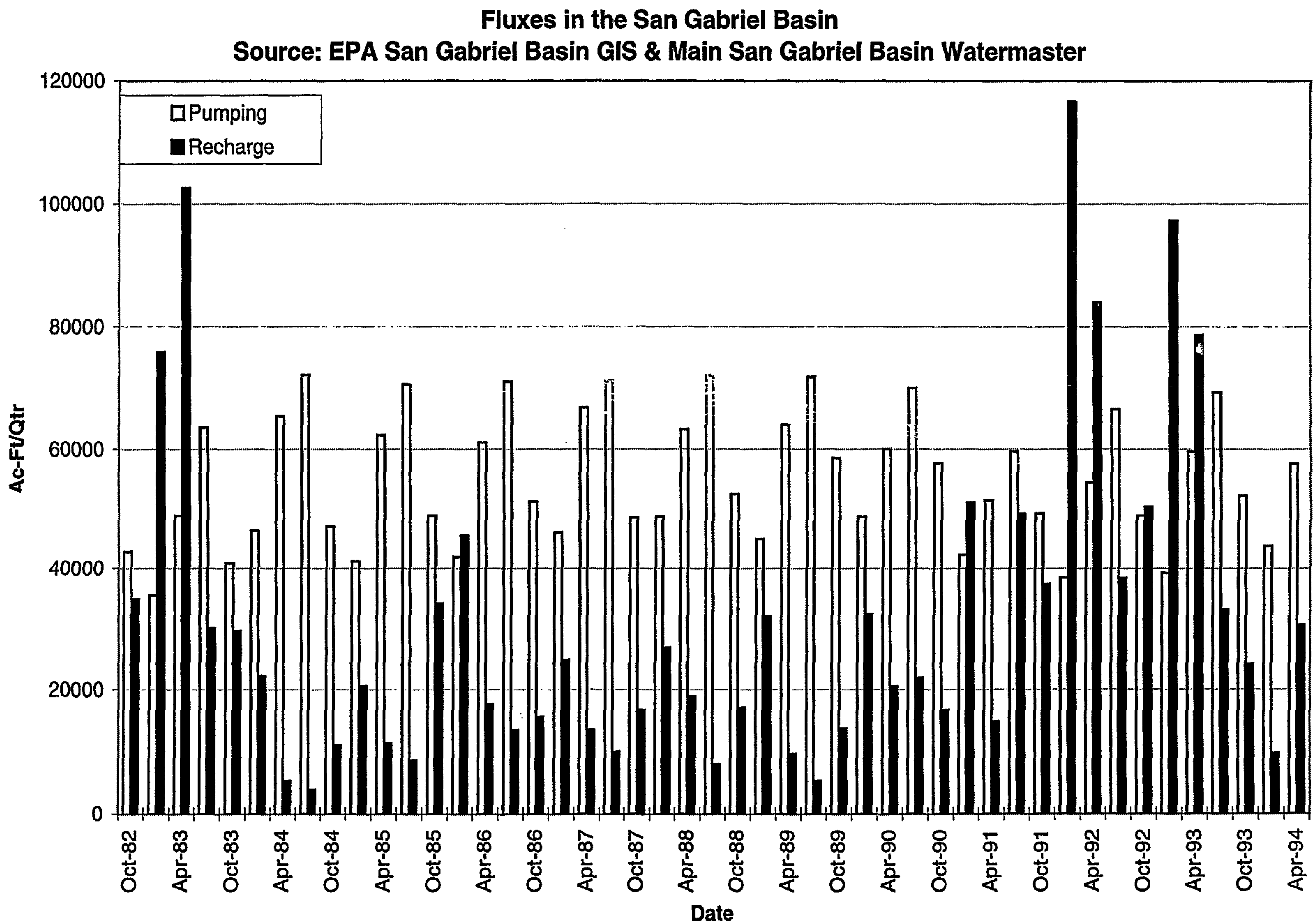
* Computed Flux; all others are specified.

## 5.2.7 Transient Calibration

Once the preliminary steady state calibration had been completed, the model was applied to simulate the 12 year period from 10/82 through 6/94. During this period the water levels at the Key Well experienced a fluctuation of approximately 100 feet, while smaller variations were observed in the eastern and western sections of the basin.

### 5.2.7.1 Variation of Model Properties

During the transient simulation the pumping fluxes, spreading basin recharge fluxes, and specified boundary heads (at Puente Valley and Whittier Narrows) were varied on a quarterly basis. The quarterly spreading basin recharge and pumping fluxes are presented in Figure 5-25. Over the transient simulation period the total volume of production pumping within the basin is relatively constant, however the recharge applied at spreading basins fluctuates much more greatly. Specified boundary fluxes, and recharge from precipitation and returned water were held constant at their long term (27-year) average (CDWR, Bulletin 104), throughout the transient simulation.




**CDM** Camp Dresser & McKee
PUMPRECH.XLS-Chart1

Figure 5-25

During this second phase of the calibration process the horizontal hydraulic conductivities of the model were varied only in the central portion of the basin. The vertical anisotropy ratio was also varied in some simulations, with values ranging from 10 to 100 being used in the basin. Properties related to the storage characteristics of the basin were also varied. The specific yield was varied over a range of 0.05 to 0.2 to better reproduce the aquifer behavior in some sectors of the basin. A number of different representations of the Duarte Fault 'notch' were also tested.

### *5.2.7.2 Transient Calibration Results*

Sixteen wells, chosen to provide comprehensive spatial coverage of the basin, were used as indicator wells during the transient calibration. The location of these wells are plotted on Figure 5-26. Hydrographs for these wells depicting the observed and simulated water levels for the transient calibration period are shown on Figures 5-27 through 5-42. These figures indicate that the model reasonably reproduces the transient behavior of the San Gabriel Basin during the wet and dry cycles experienced during the simulation period. The model is particularly good at simulating the behavior of the central portion (BPOU area) of the basin. The very different behavior in the El Monte area and in the vicinity of San Dimas are also simulated quite well. At San Dimas the relatively small variation of only about 20 feet, which the model reproduces during this period, is very different from the 100 foot variation in the central basin area. North of the Duarte Fault, at Fish Canyon, the model reproduces the oscillating nature of the observed head. Importantly, the model preserves the 150 to 200 foot head difference observed across the Duarte Fault, indicating that the fundamental hydraulic characteristics of the Duarte Fault are well represented in the model.

The model is somewhat less successful at simulating hydrographs in the Glendora area. This area is heavily influenced by the boundary fluxes, which, as noted, were maintained at their long term average values (CDWR, Bulletin 104) during the transient simulation. No data on short term variation in these fluxes was available. The transient calibration could likely be improved by varying the specified boundary fluxes in this area.

### *5.2.7.3 Transient Fluxes*

A summary of the boundary and applied fluxes during the transient simulation is presented in Table 5-5. These fluxes are computed on a Water Year basis for each of the complete Water Years in the simulated period. Note that only three quarters in the 1993-94 Water Year were included in the simulation, and annual fluxes for 1993-94 are not included in Table 5-5. The specified boundary fluxes from the Raymond Basin, the Chino Basin and the San Gabriel Mountains were held constant throughout the transient simulation period. Recharge from precipitation and applied water was also held constant.

The computed fluxes at the Puente Valley boundary and at Whittier Narrows are presented in Table 5-5 for each complete Water Year simulated. The fluxes from Puente Valley into the main San Gabriel Basin range from 350 to 2,000 Ac-ft/yr. At the Whittier Narrows boundary 2,000 to 22,000 Ac-ft/yr are discharged to the Central Basin.

The "storage flux" in Table 5-5 represents water which is either released from or placed into storage in the aquifer during any given water year. There are 7 years during which water is released from storage (a negative flux value in Table 5-5)as a result of the long drought period from 1984 through 1990. In addition, water was added to storage in 4 years of the 12 year transient simulation.

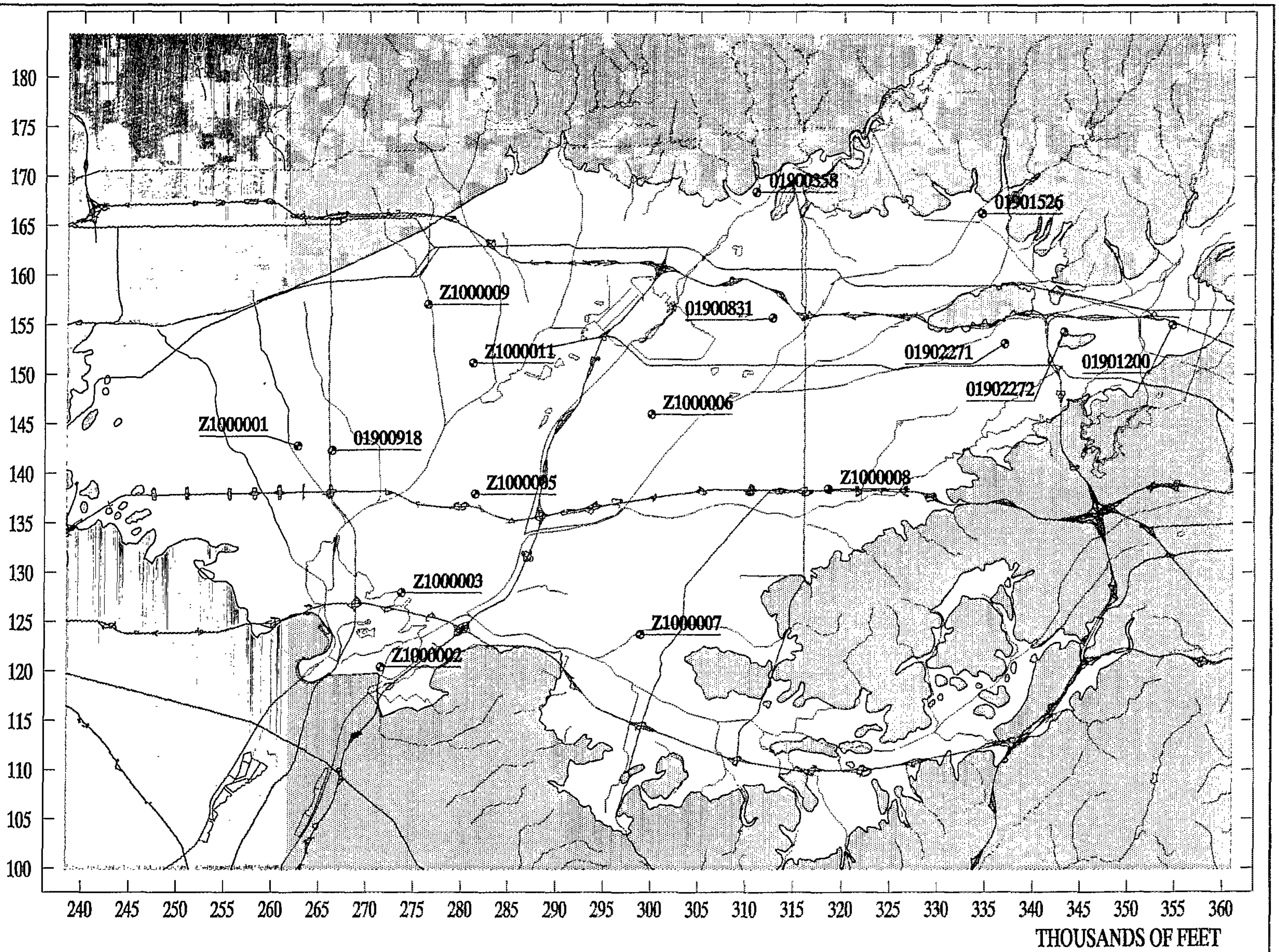



FIGURE 5-26

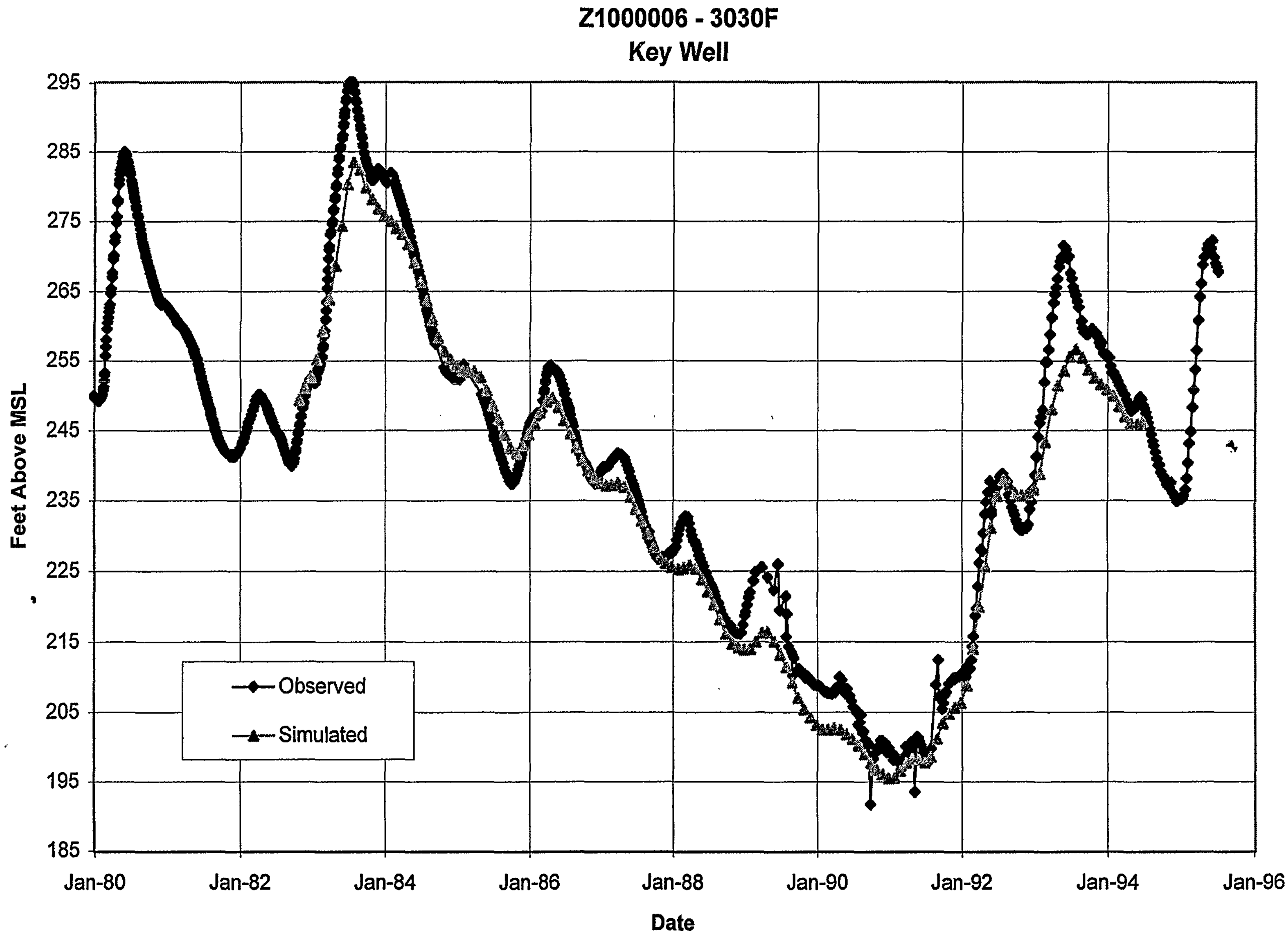
Location of Transient Calibration Wells

Baldwin Park Operable Unit Pre-Remedial Design

CDM

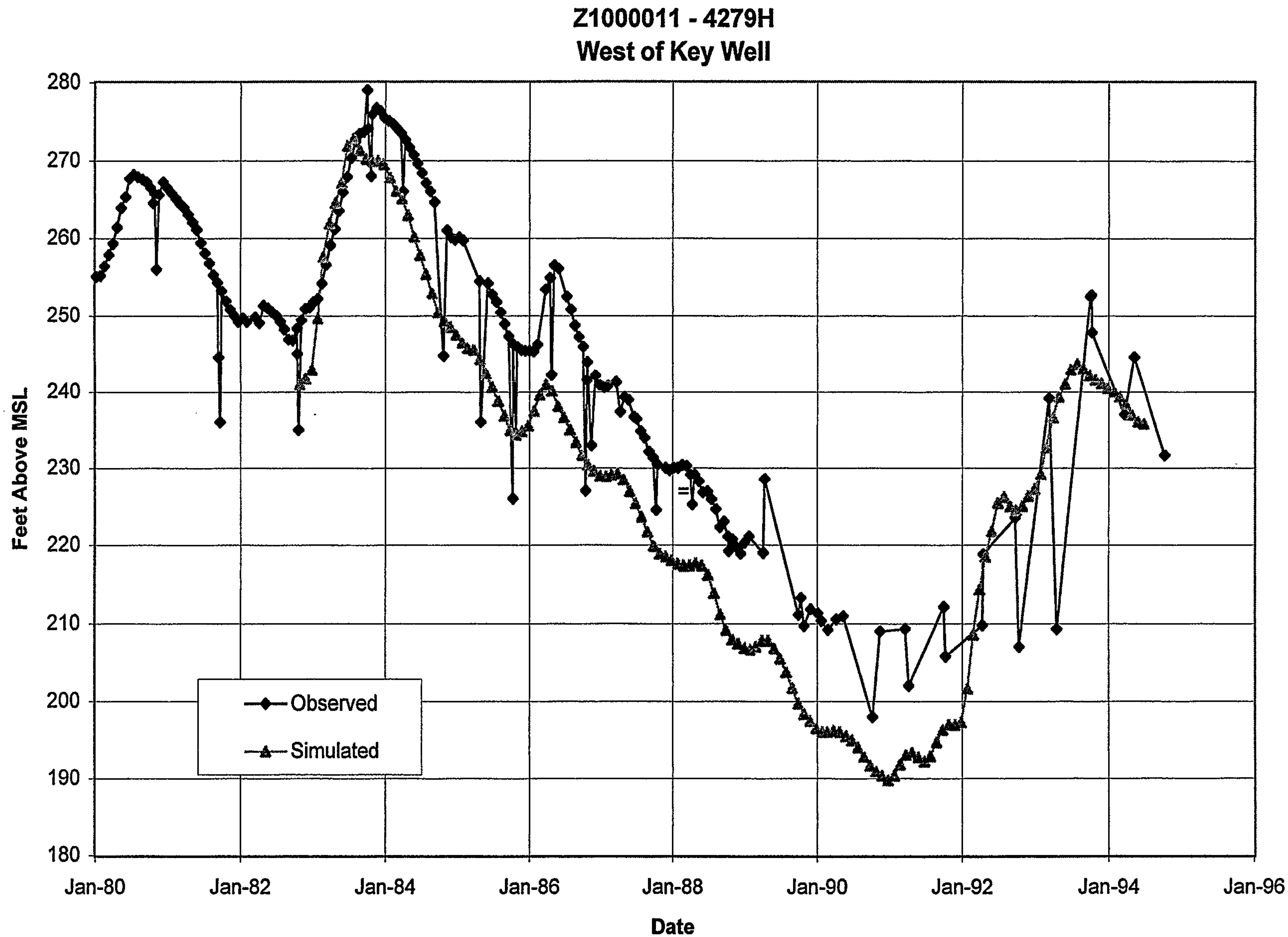
environmental engineers, scientists, planners, & management consultants

**Baldwin Park Operable Unit Pre-Remedial Design**
**Groundwater Model**



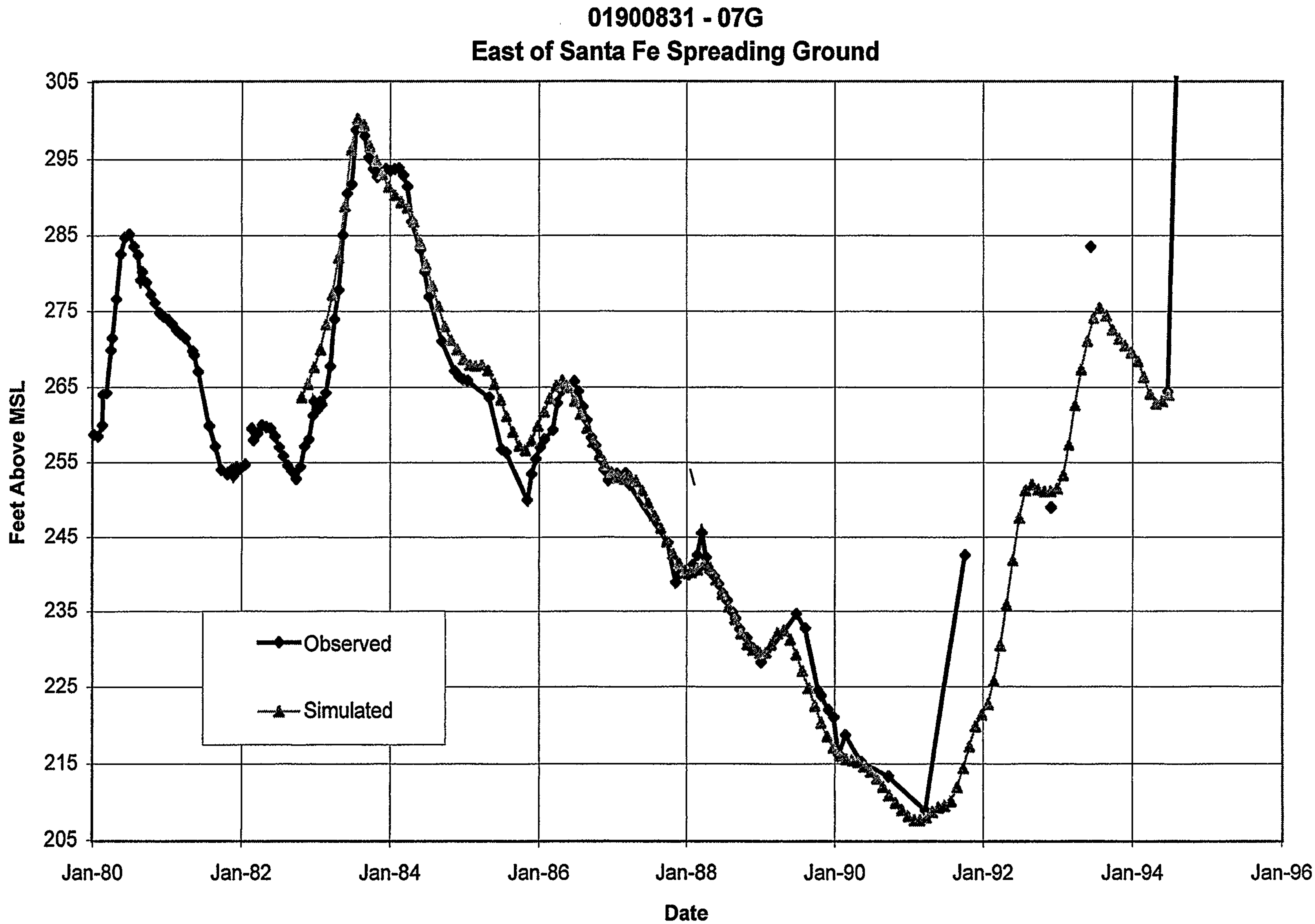

**CDM** Camp Dresser & Mckee
REDKH1.XLS-Z1000006
11/25/96

**Figure 5-27**



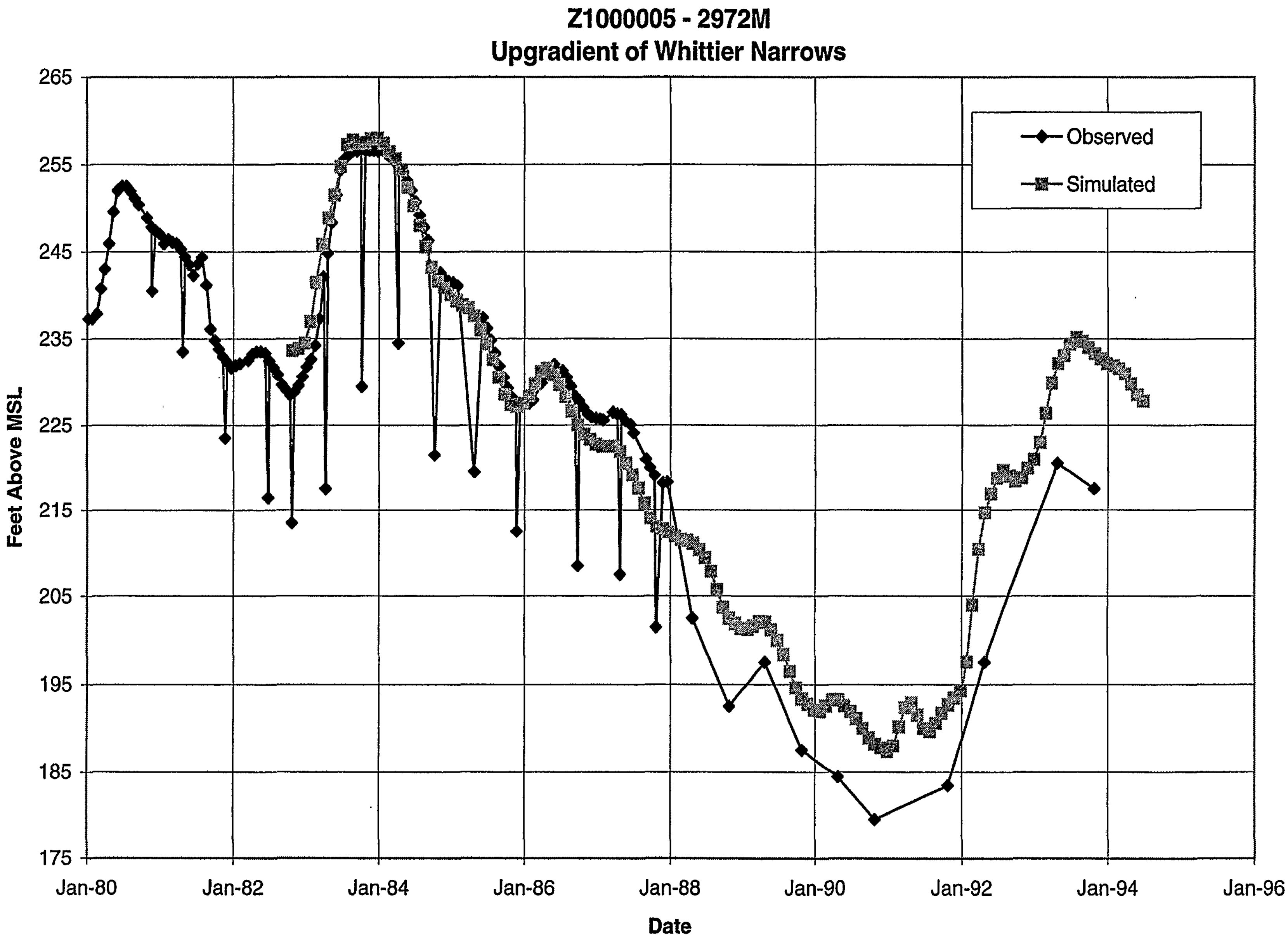

**CDM** Camp Dresser & Mckee
REDKH1.XLS-Z1000011
11/25/96

Figure 5-28




**CDM** Camp Dresser & Mckee
REDKH1.XLS-01900831
11/25/96

Figure 5-29




CDM Camp Dresser & Mckee
REDKH1.XLS-Z1000005
11/27/96

Figure 5-30

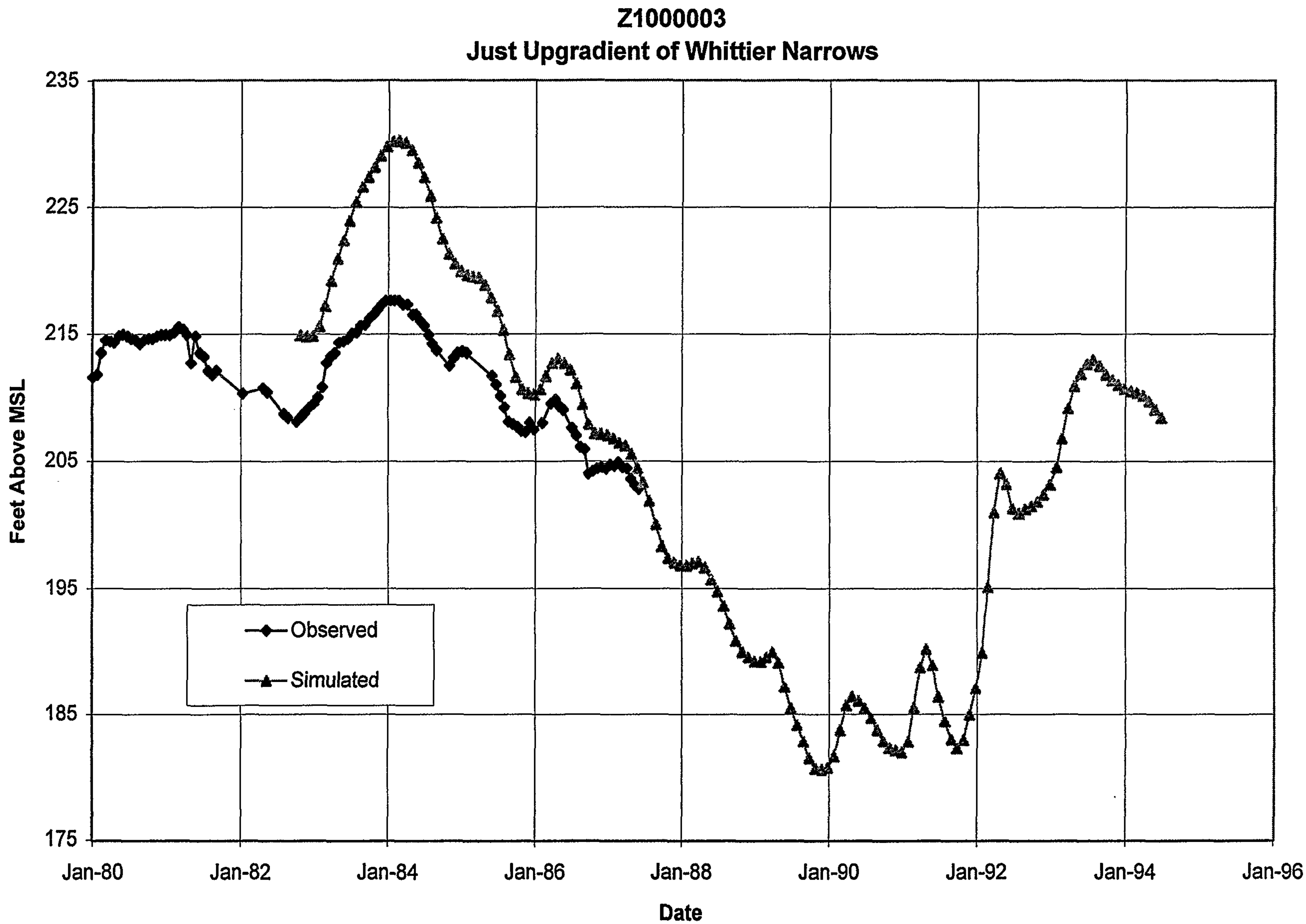
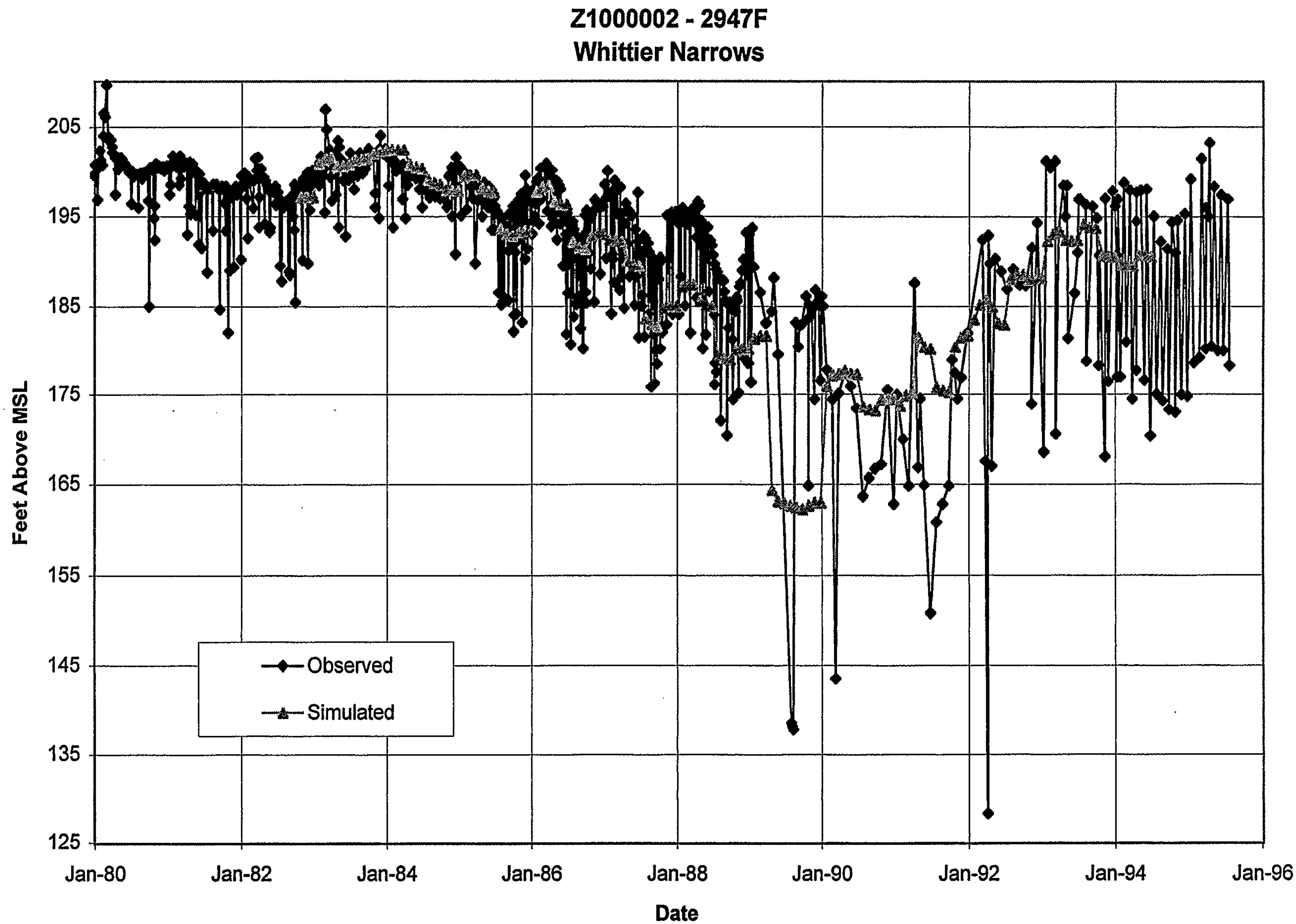

Z1000003
Just Upgradient of Whittier Narrows
235
225
215
205
195
185
175
Feet Above MSL
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Date
Observed
Simulated

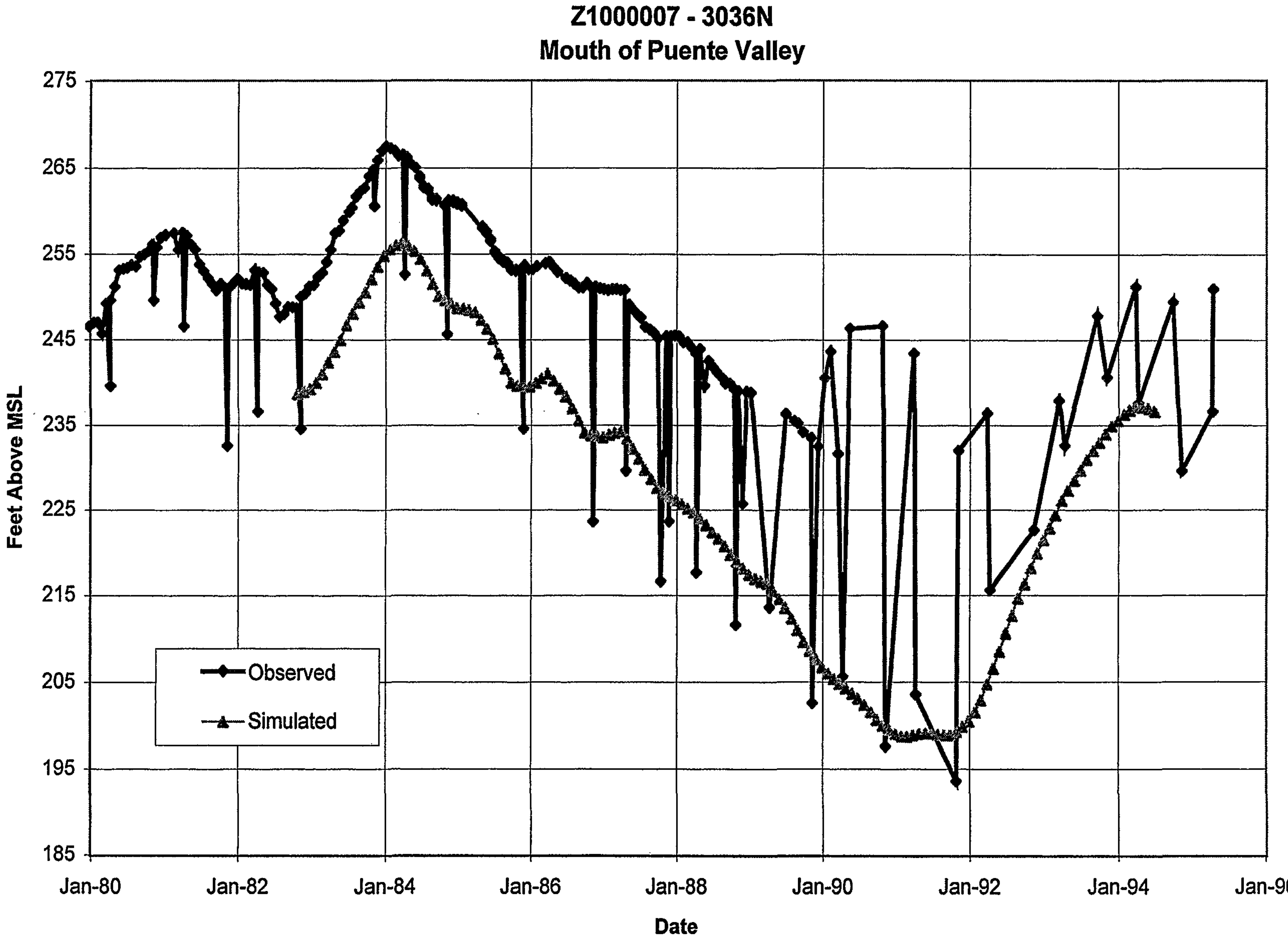


Figure 5-31




**CDM** Camp Dresser & Mckee
REDKH1.XLS-Z1000002
11/25/96

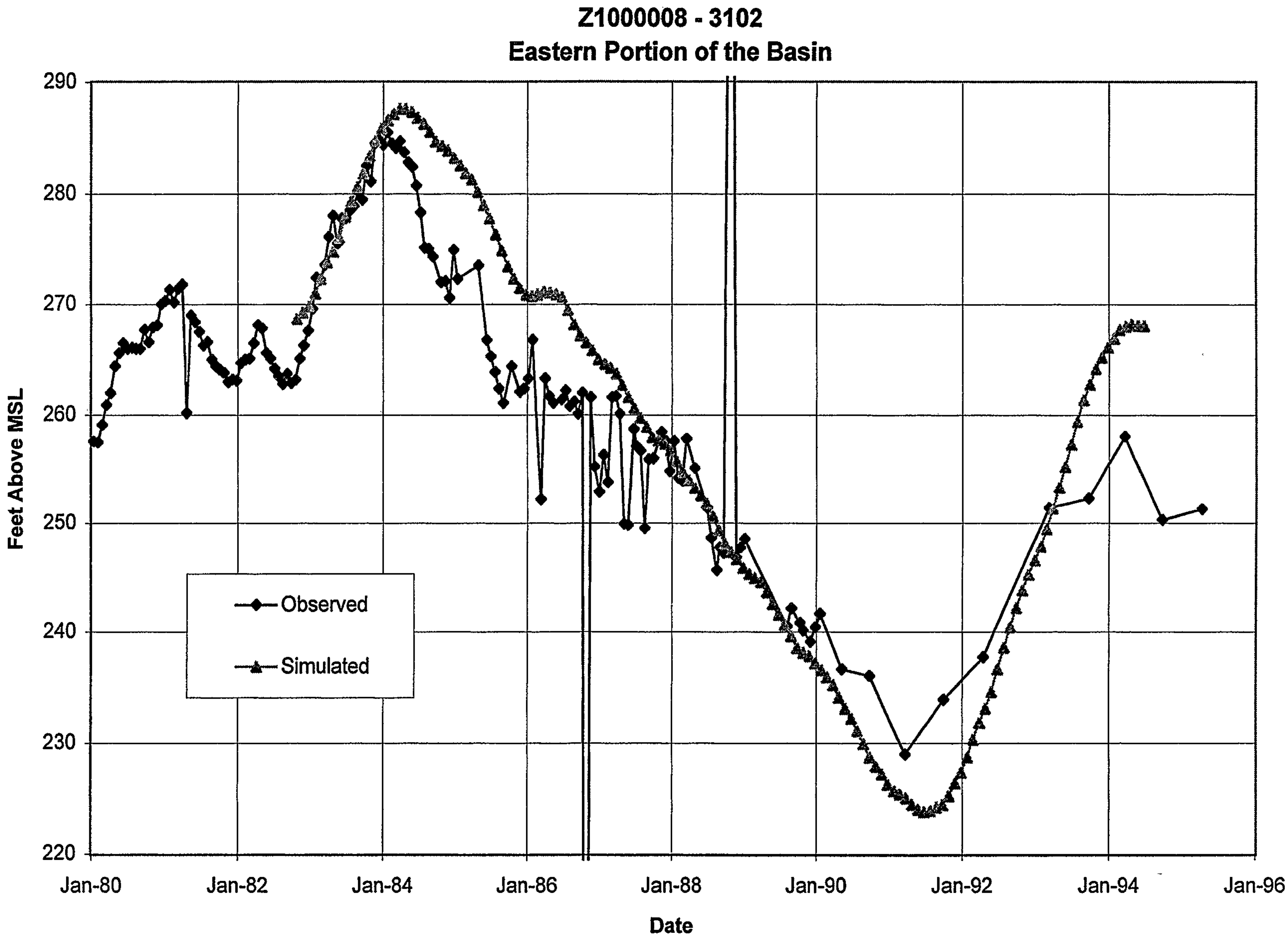
Figure 5-32




**CDM** Camp Dresser & Mckee
REDKH1.XLS-Z1000007
11/25/96

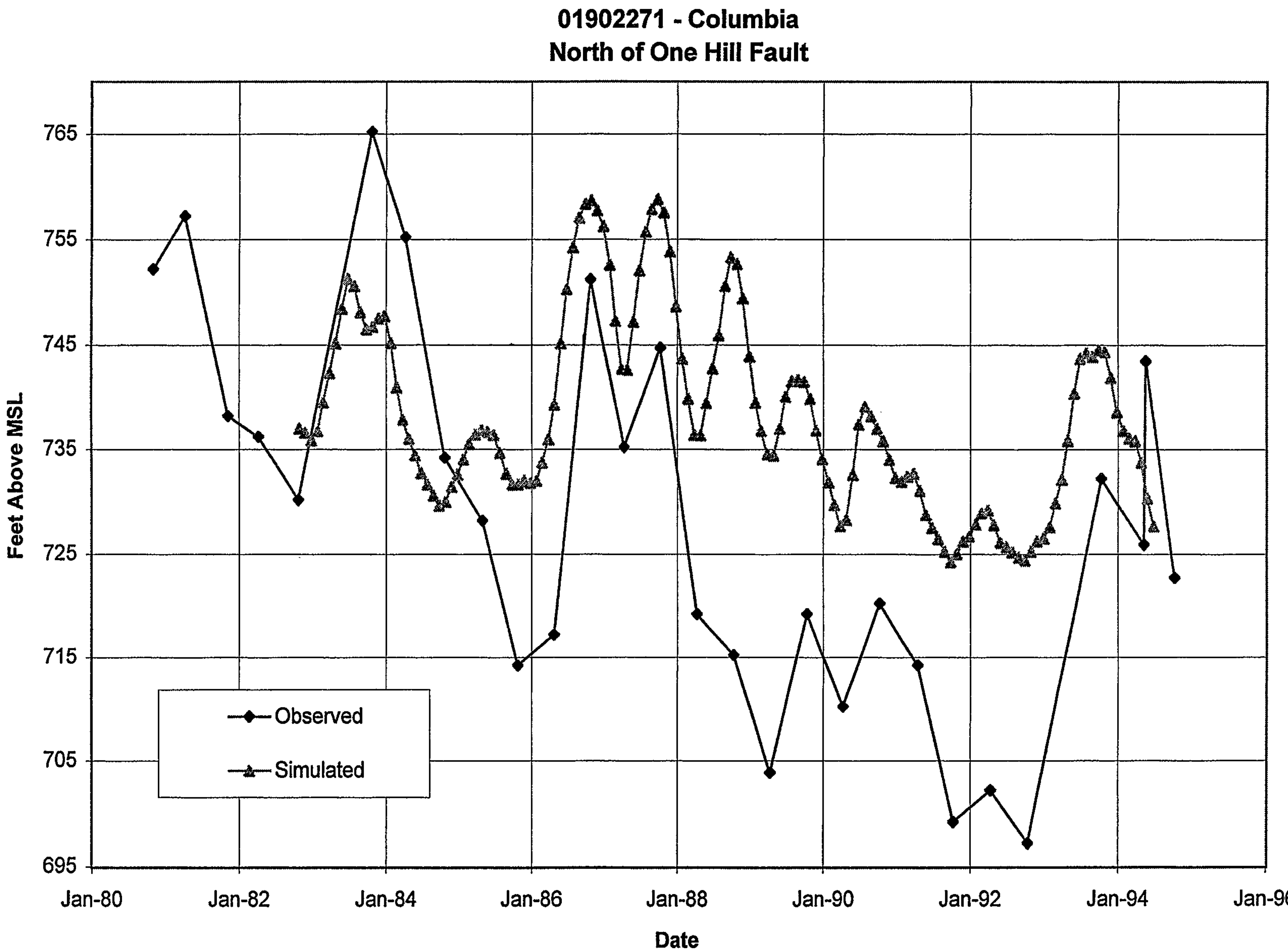
Figure 5-33

Baldwin Park Operable Unit Pre-Remedial Design
Groundwater Model




**CDM** Camp Dresser & Mckee
REDKH1.XLS-Z1000008
11/25/96

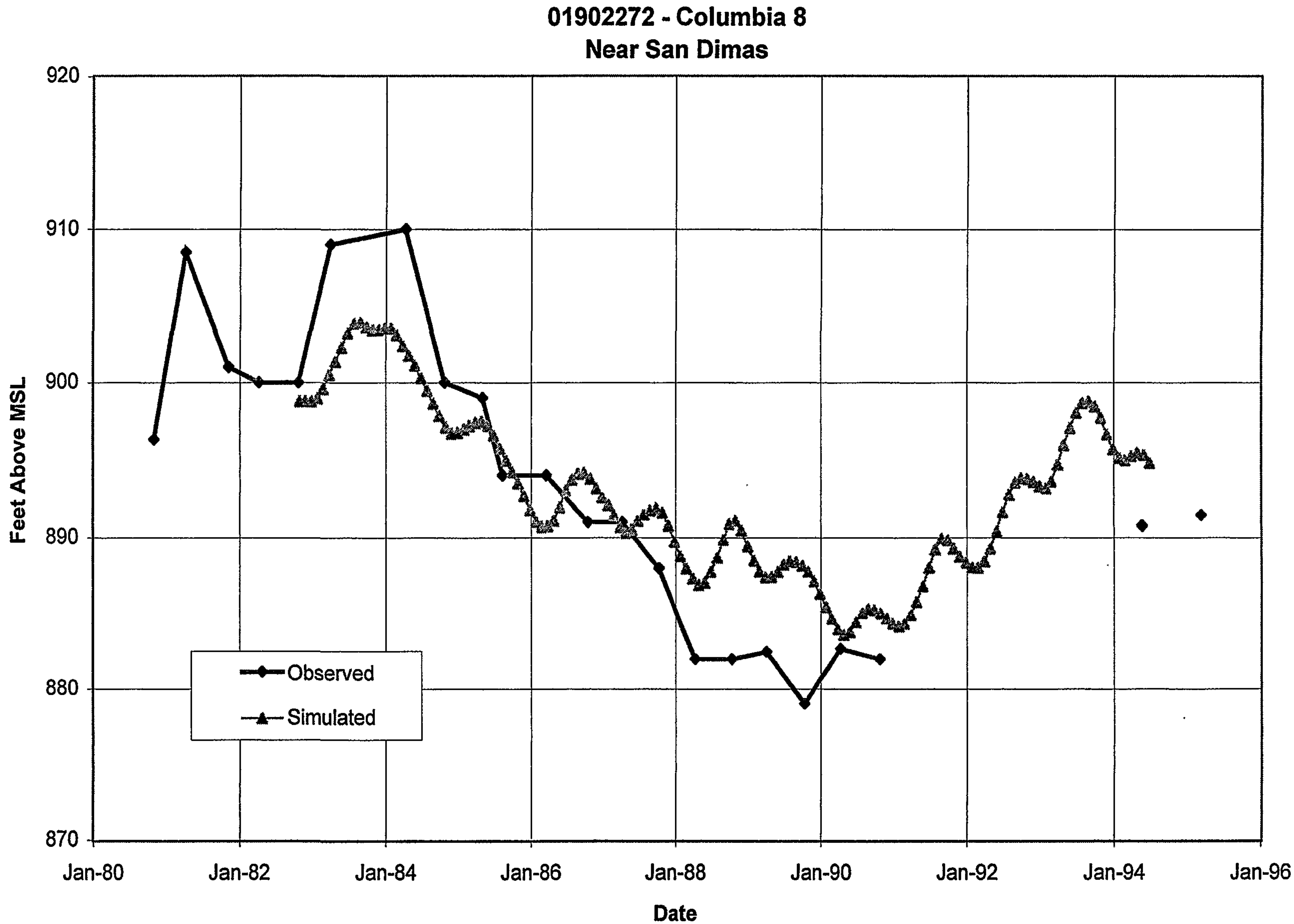
Figure 5-34




**CDM** Camp Dresser & Mckee
REDKH1.XLS-01902271
11/25/96

Figure 5-35

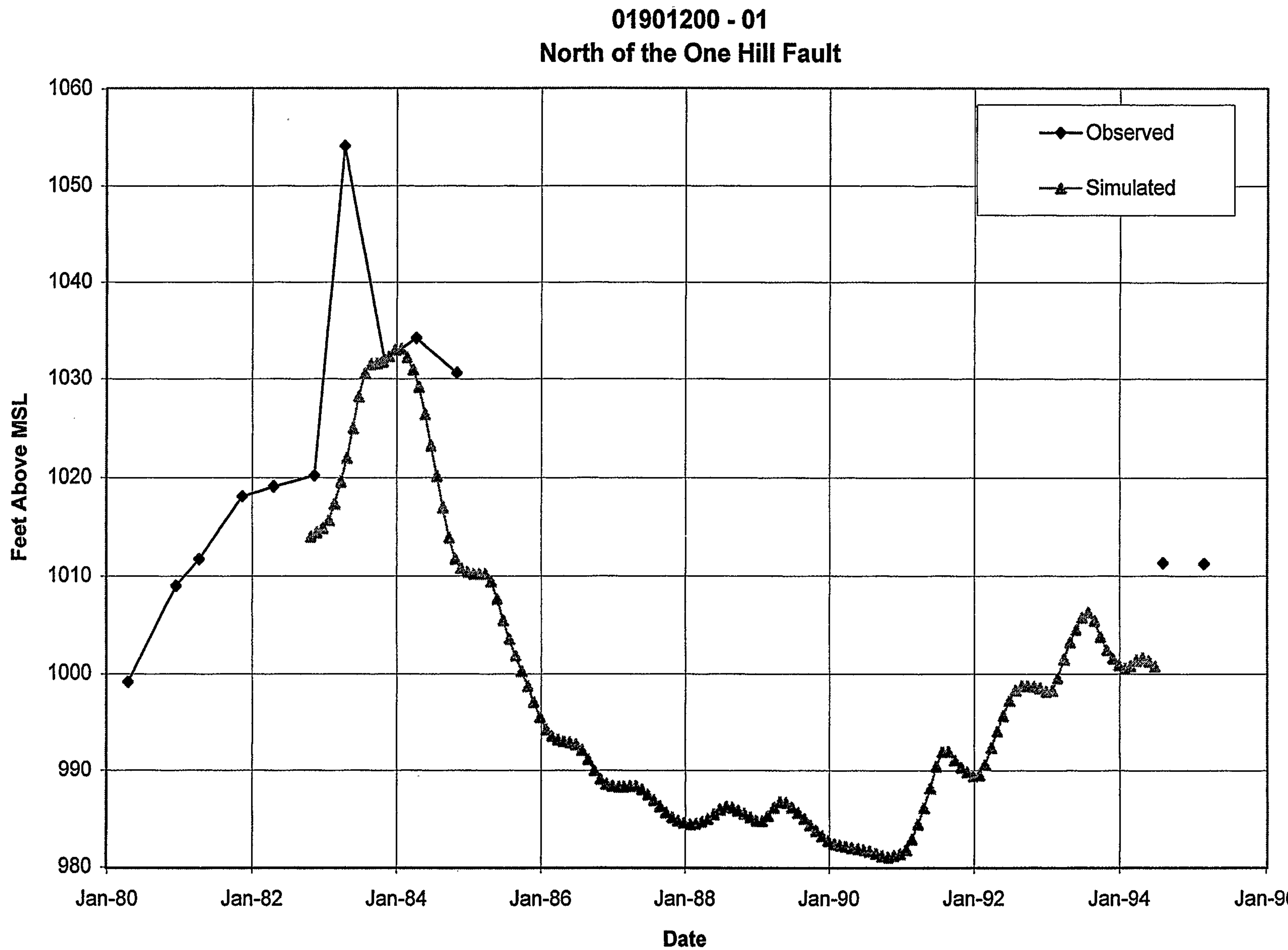
Baldwin Park Operable Unit Pre-Remedial Design
Groundwater Model




**CDM** Camp Dresser & Mckee
REDKH1.XLS-01902272
11/25/96

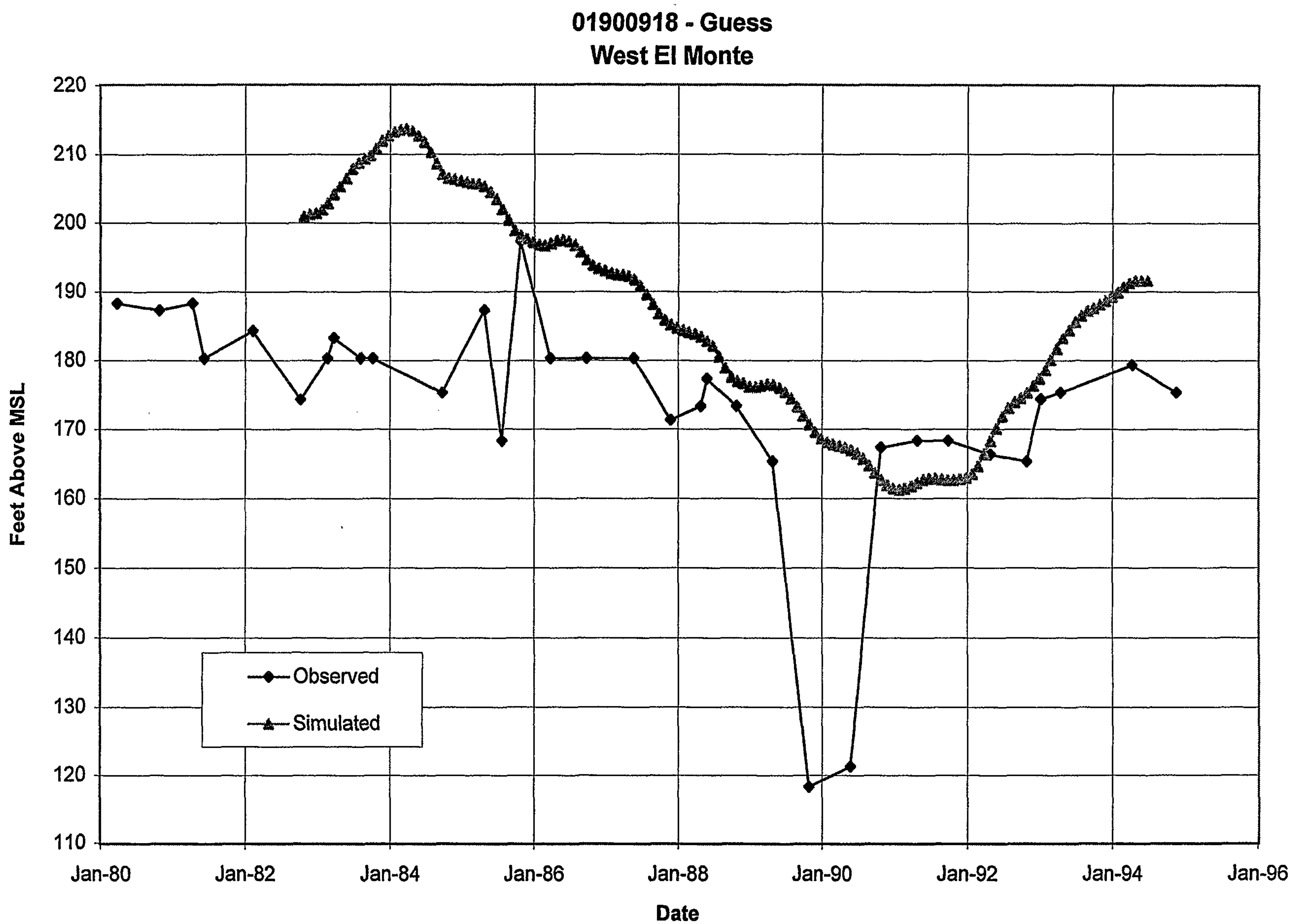
Figure 5-36

Baldwin Park Operable Unit Pre-Remedial Design
Groundwater Model



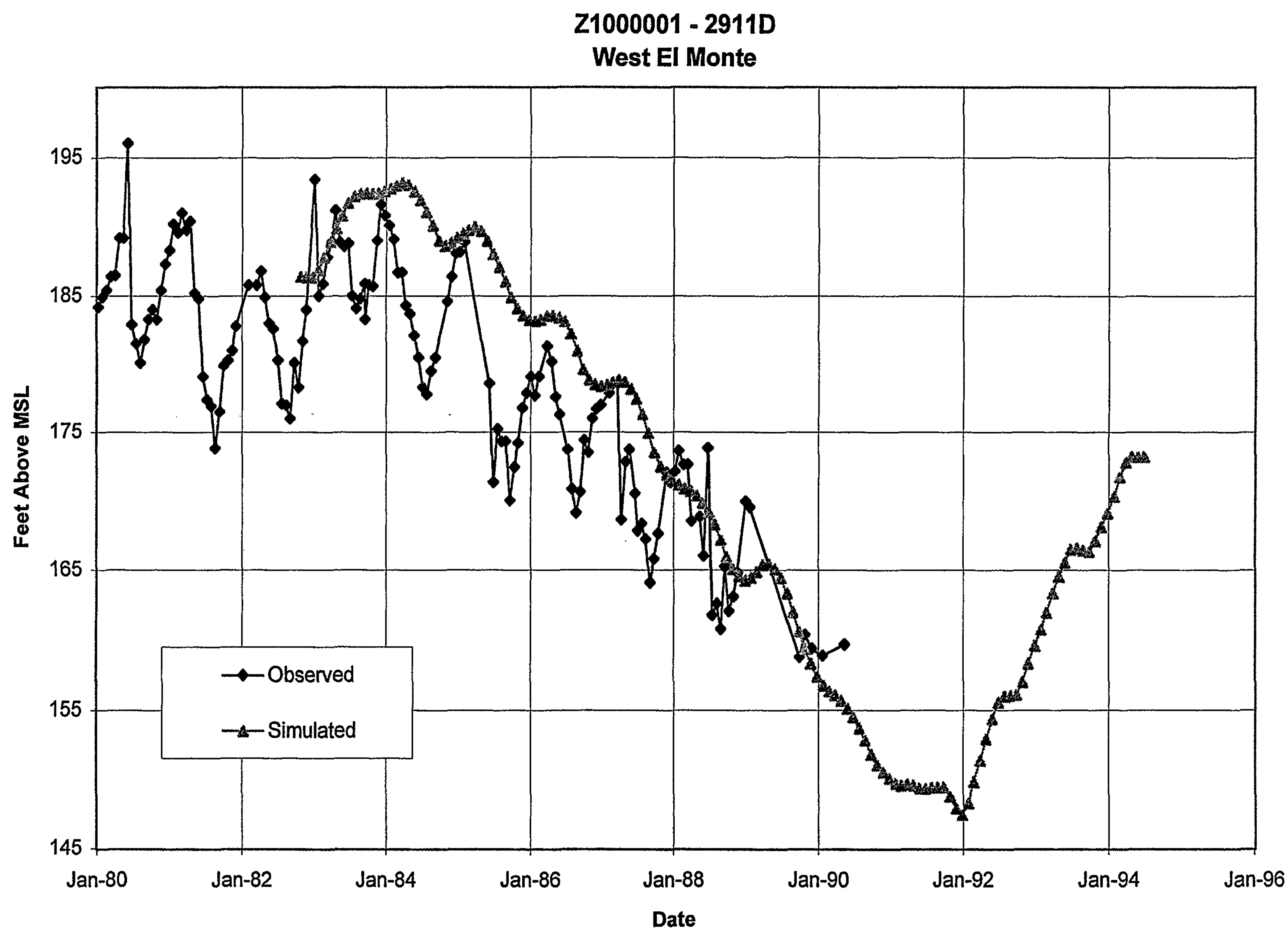

**CDM** Camp Dresser & Mckee
REDKH1.XLS-01901200
11/25/96

Figure 5-37




**CDM** Camp Dresser & Mckee
REDKH1.XLS-01900918
11/25/96

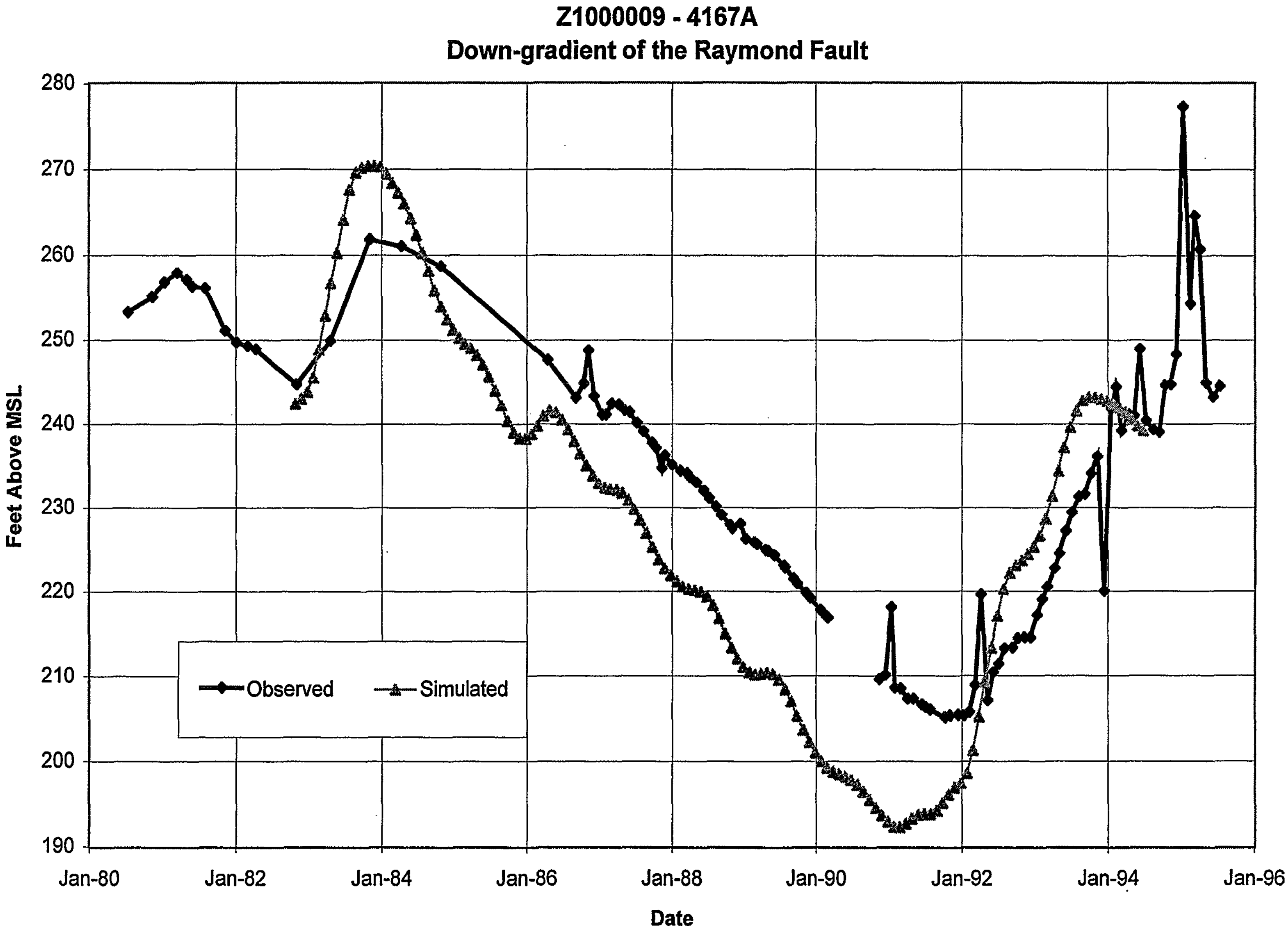
Figure 5-38




**CDM** Camp Dresser & Mckee
REDKH1.XLS-Z1000001
11/25/96

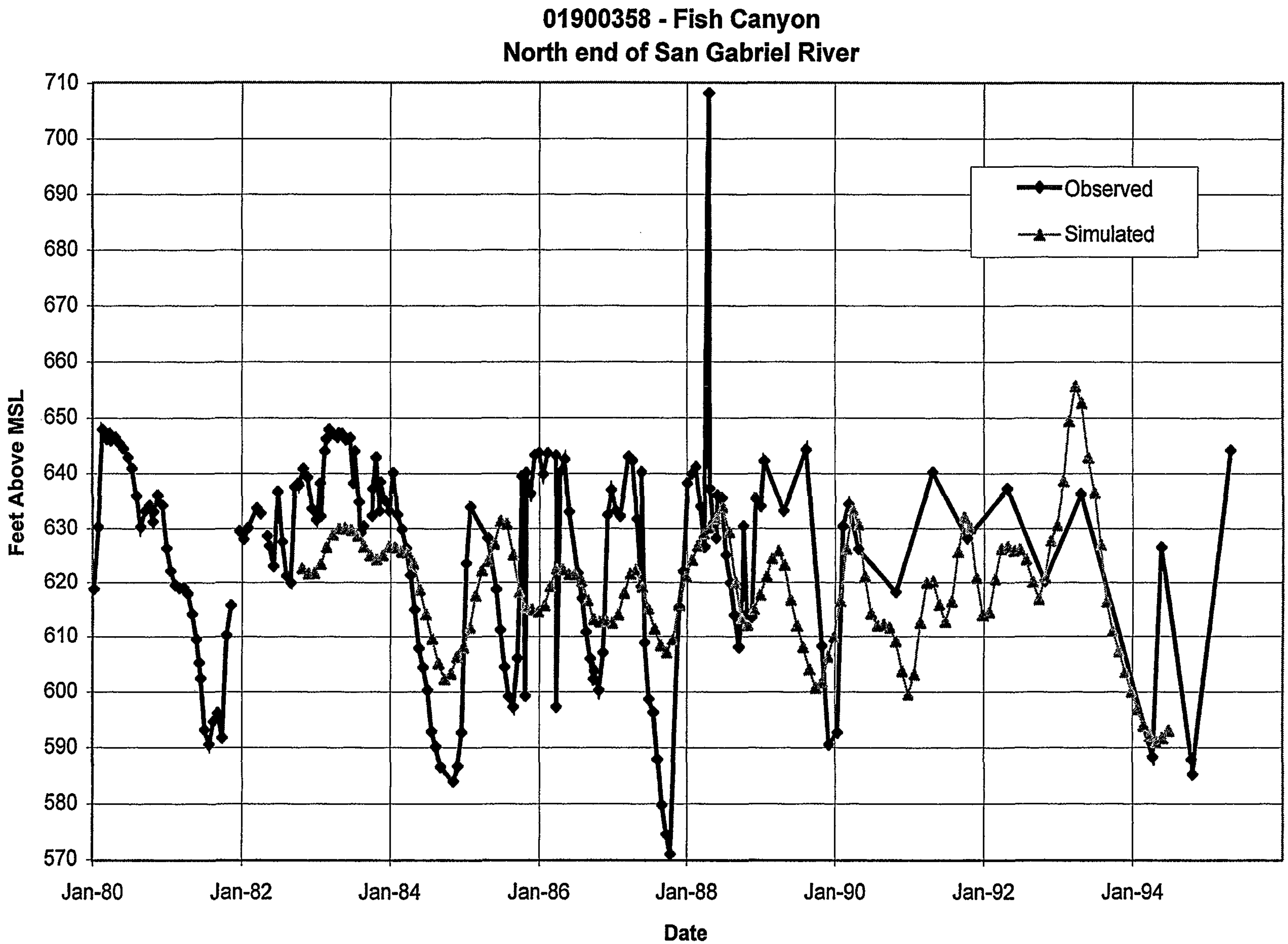
Figure 5-39

Baldwin Park Operable Unit Pre-Remedial Design
Groundwater Model

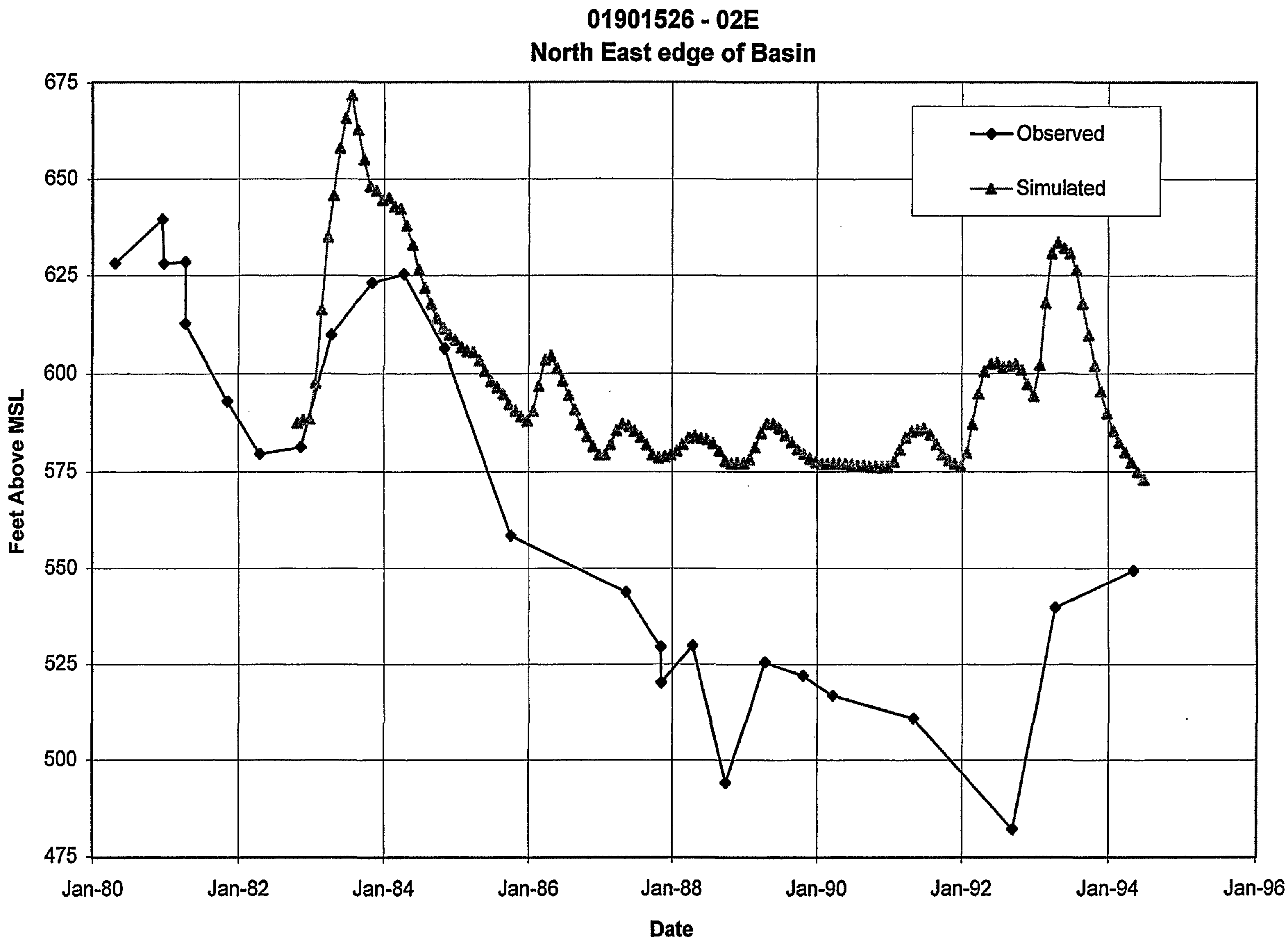



**CDM** Camp Dresser & McKee
REDKH1.XLS-Z1000009
11/25/96

Figure 5-40


01900358 - Fish Canyon
North end of San Gabriel River
Feet Above MSL
710
700
690
680
670
660
650
640
630
620
610
600
590
580
570
Observed
Simulated
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Date

Baldwin Park Operable Unit Pre-Remedial Design
Groundwater Model




CDM Camp Dresser & Mckee
REDKH1.XLS-01901526
11/25/96

Figure 5-42

**Table 5-5**
**Baldwin Park Operable Unit**
**Transient Simulation Flux Summary**

| **Fluxes (Ac-Ft/Yr)** | **Water Year** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 82-83 | 83-84 | 84-85 | 85-86 | 86-87 | 87-88 | 88-89 | 89-90 | 90-91 | 91-92 | 92-93 |
| **Boundary Fluxes** | | | | | | | | | | | |
| Chino/San Dimas | 6,900 | 6,900 | 6,900 | 6,900 | 6,900 | 6,900 | 6,900 | 6,900 | 6,900 | 6,900 | 6,900 |
| Raymond Fault | 6,200 | 6,200 | 6,200 | 6,200 | 6,200 | 6,200 | 6,200 | 6,200 | 6,200 | 6,200 | 6,200 |
| San Gabriel Mount | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 |
| Puente Valley | 2,064 | 1,624 | 851 | 771 | 852 | 503 | 555 | 366 | 594 | 1,850 | 2,050 |
| Whittier Narrows | -14,694 | -22,102 | -14,014 | -10,060 | -5,355 | -5,481 | -2,040 | -6,506 | -11,321 | -16,093 | -12,335 |
| **Recharge Fluxes** | | | | | | | | | | | |
| Precipitation & Applied Water | 55,429 | 55,429 | 55,429 | 55,429 | 55,429 | 55,429 | 55,429 | 55,429 | 55,429 | 55,429 | 55,429 |
| Spreading Basins | 281,669 | 72,603 | 60,949 | 119,138 | 75,800 | 84,285 | 73,769 | 102,149 | 154,056 | 296,451 | 288,922 |
| **Pumping Fluxes** | -187,775 | -221,450 | -217,875 | -219,650 | -231,885 | -229,182 | -229,852 | -233,906 | -207,947 | -205,689 | -214,018 |
| **Model Generated Fluxes** | | | | | | | | | | | |
| Morris Dam Boundary Nodes | 3,383 | 12,545 | 7,531 | 11,319 | 6,890 | 2,710 | 8,579 | 3,609 | 1,459 | 7,754 | -12,994 |
| Rising/Dry | -2,459 | -1,810 | 120 | -34 | 186 | 463 | 624 | 623 | 635 | 587 | 69 |
| **Storage Flux** | 152,841 | -85,553 | -88,663 | -25,556 | -80,023 | -73,053 | -74,116 | -58,193 | 14,213 | 159,853 | 124,376 |

## 5.2.8 Flow Model Sensitivity Analysis

Two series of flow model sensitivity analyses were conducted. In the first series aquifer hydraulic properties were varied in the BPOU area to assess their effect on the calibrated model. The second series was designed to assess the impact of the Duarte Fault notch representation on the simulated steady state and transient flow fields. Table 5-6 summarizes the sensitivity analyses simulations.

**Table 5-6**
**Summary of Flow Model Sensitivity Analyses**

| Sensitivity Case | Description of Modification |
|---|---|
| 1 | Kh Increased by 50 ft/day in Center of Basin (Kh/Kv=10) |
| 2 | Kh Decreased by 50 ft/day in Center of Basin (Kh/Kv=30) |
| 3 | Kh Decreased by 100 ft/day in Center of Basin (Kh/Kv=30) |
| 4 | Fault Gap Centered over San Gabriel River |
| 5 | Fault Gap Extended Along San Gabriel Canyon Opening |
| 6 | Fault Gap Centered Over VOC Plume |

### 5.2.8.1 Aquifer Hydraulic Property Sensitivity Analysis

The sensitivity simulations which varied hydraulic conductivities focused on the central portion of the basin, in the area of the Baldwin Park Operable Unit. Model properties which were altered cover the area south of the Duarte fault and north of the I-10 in the center of the basin. These properties have an original horizontal conductivity of 250 and 350 ft/day, as presented in Figures 5-9 and 5-10.

- Sensitivity Analysis Case 1 - Horizontal hydraulic conductivities are increased to 300 and 400 ft/day in the center of the basin. The vertical anisotropy ratio is 10 to 1 for these areas. A plot of the calculated minus observed water levels is presented in Figure 5-43. The "pseudo" steady state calibration statistics are similar to the calibrated model (Table 5-7).

- Sensitivity Analysis Case 2 - Horizontal hydraulic conductivities are decreased to 200 and 300 ft/day in the center of the basin. The vertical anisotropy ratio is 30 to 1 for these areas. Figure 5-44 presents calculated minus observed water levels. Calibration statistics are degraded from the calibrated model.

- Sensitivity Analysis Case 3 - Horizontal hydraulic conductivities are decreased to 150 and 250 ft/day in the center of the basin. The vertical anisotropy ratio is maintained at 30 to 1 in these areas. The calculated minus observed water levels are presented in Figure 5-45. Calibration statistics are significantly degraded from the calibrated model.

### 5.2.8.2 Duarte Fault Sensitivity Analysis

Three different sensitivity analysis simulations were run to evaluate the impact of the Duarte Fault notch. As illustrated on Figures 5-15 and 5-16, the notch in the Duarte Fault is located just to the west of the San Gabriel river, and is a V-shaped area of high horizontal conductivity.

- Sensitivity Analysis Case 4 - The notch is moved slightly to the east, and is centered over the San Gabriel River. The shape and horizontal conductivity of the notch is maintained as in the calibrated model. A plot of calculated minus observed water levels is presented in Figure 5-46. The calibration statistics are very similar to the calibrated model, which does not appear to be sensitive to this change.

- Sensitivity Analysis Case 5 - The gap in the fault is extended along the entire width of the San Gabriel Canyon opening. The upper two active layers of the model in the gap are modeled with a high horizontal conductivity. Figure 5-47 displays the calculated minus observed water levels. Again the calibration statistics are relatively insensitive to this change.

- Sensitivity Analysis Case 6 - The notch is moved to the east to be centered over the high concentration area of the VOC plume located in the BPOU. The notch shape and horizontal conductivity is the same as in the calibrated model. The calculated minus observed water levels for this simulation are presented in Figure 5-48. From this figure it is apparent that less water is passing through the fault into the central basin. Water levels south of the Duarte Fault are lower, and north of the Duarte Fault are higher than those simulated with the calibrated model. The calibration statistics are also slightly degraded.

A summary of the calibration statistics for the sensitivity analysis is presented in Table 5-7(a). Although the steady state calibration statistics for Cases 1, 4, and 5 are comparable to, or even slightly better, than those of the base case model, the base case calibrated model is considered to better represent the behavior of the basin based upon the transient calibration simulations (Table 5-7(b)).

**Table 5-7(a)**
**Summary Statistics - Flow Model Sensitivity Analysis**

| Sensitivity Case | Mean Difference (ft) | Standard Deviation |
|---|---|---|
| Base Case | 1.885 | 7.338 |
| 1 | 0.782 | 7.404 |
| 2 | 3.116 | 7.571 |
| 3 | 4.690 | 8.357 |
| 4 | 1.577 | 7.304 |
| 5 | 1.759 | 7.527 |
| 6 | -0.705 | 8.578 |

***Table 5-7 (b)***
***Transient Calibration - Summary Statistics***

| | *Key Well* | | *Glendora 07G* | | *Z1000005* | |
|---|---|---|---|---|---|---|
| | *Corr. Coef.* | *RMSE* | *Corr. Coef.* | *RMSE* | *Corr. Coef.* | *RMSE* |
| Base Case | 0.9858 | 5.17 | 0.9819 | 4.80 | 0.9661 | 5.33 |
| Sensitivity Case 1 | 0.9891 | 6.13 | 0.9826 | 6.52 | 0.9518 | 6.21 |
| Sensitivity Case 2 | 0.9855 | 4.16 | 0.9819 | 7.84 | 0.9673 | 5.38 |
| Sensitivity Case 3 | 0.9846 | 6.37 | 0.9917 | 15.72 | 0.9686 | 5.53 |

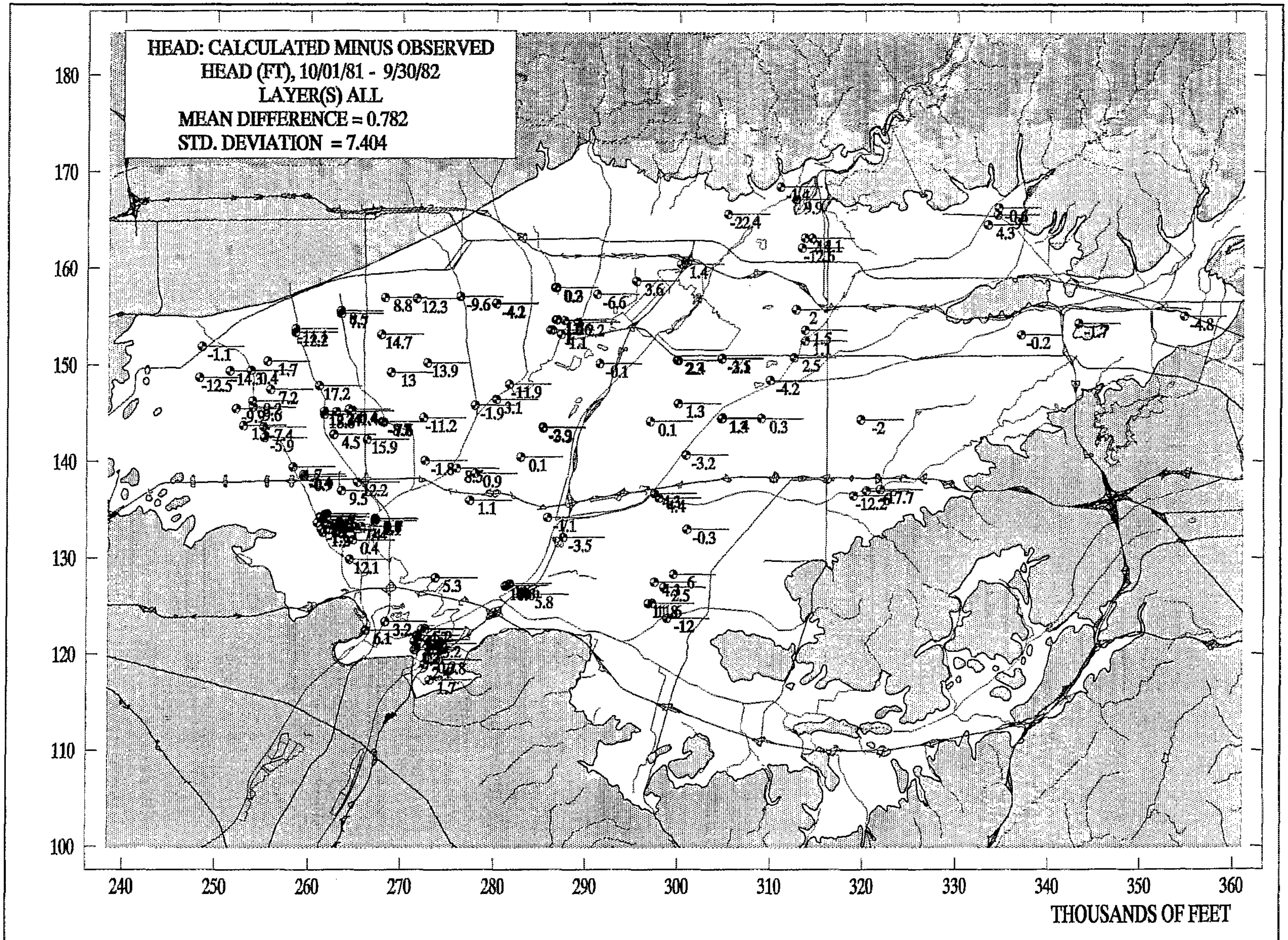



FIGURE 5-43

Sensitivity Analysis Case 1
Hydraulic Conductivities Increased by 50 ft/day in Center of Basin
Calculated Minus Observed Water Levels
Baldwin Park Operable Unit Pre-Remedial Design

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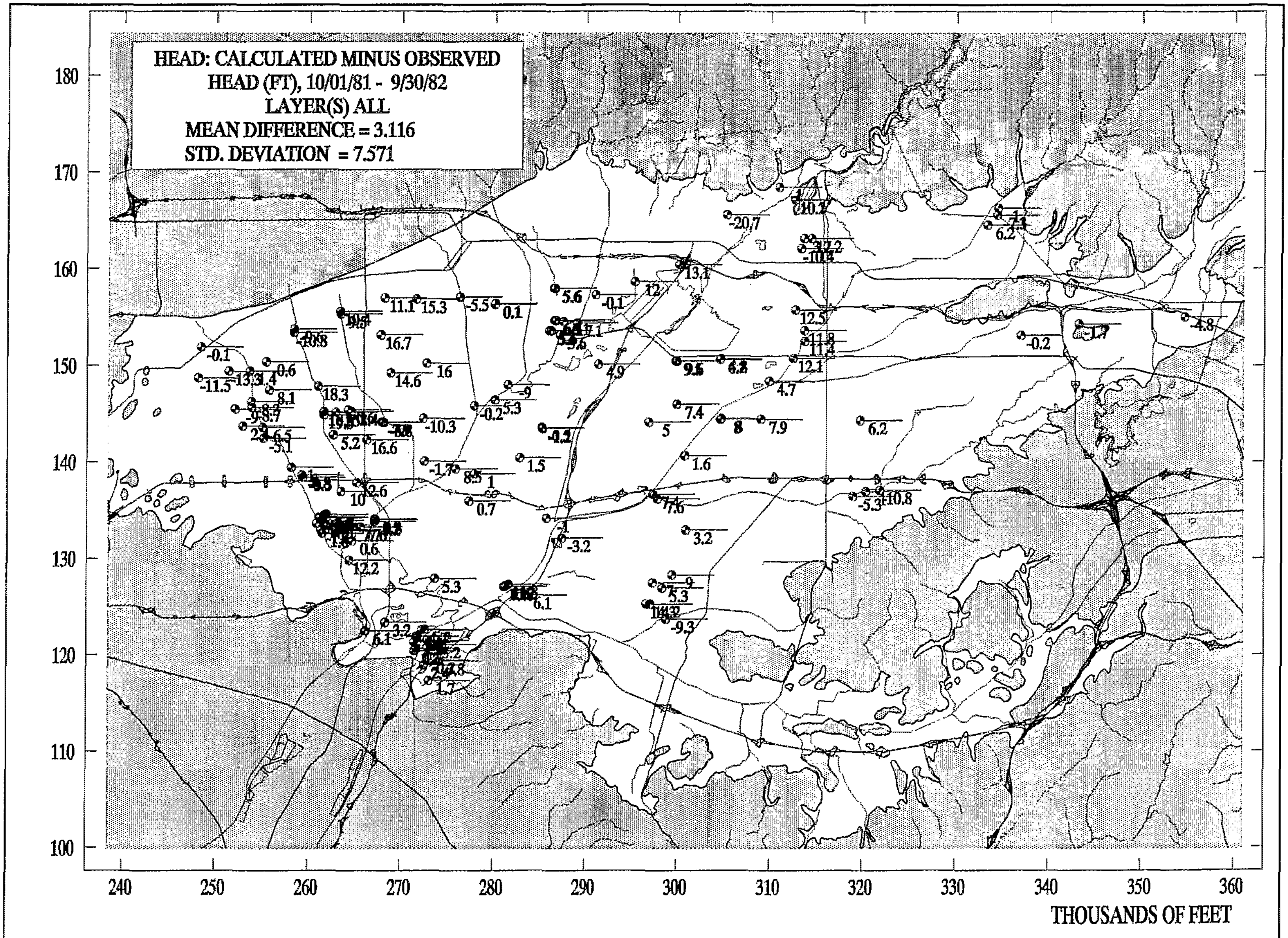
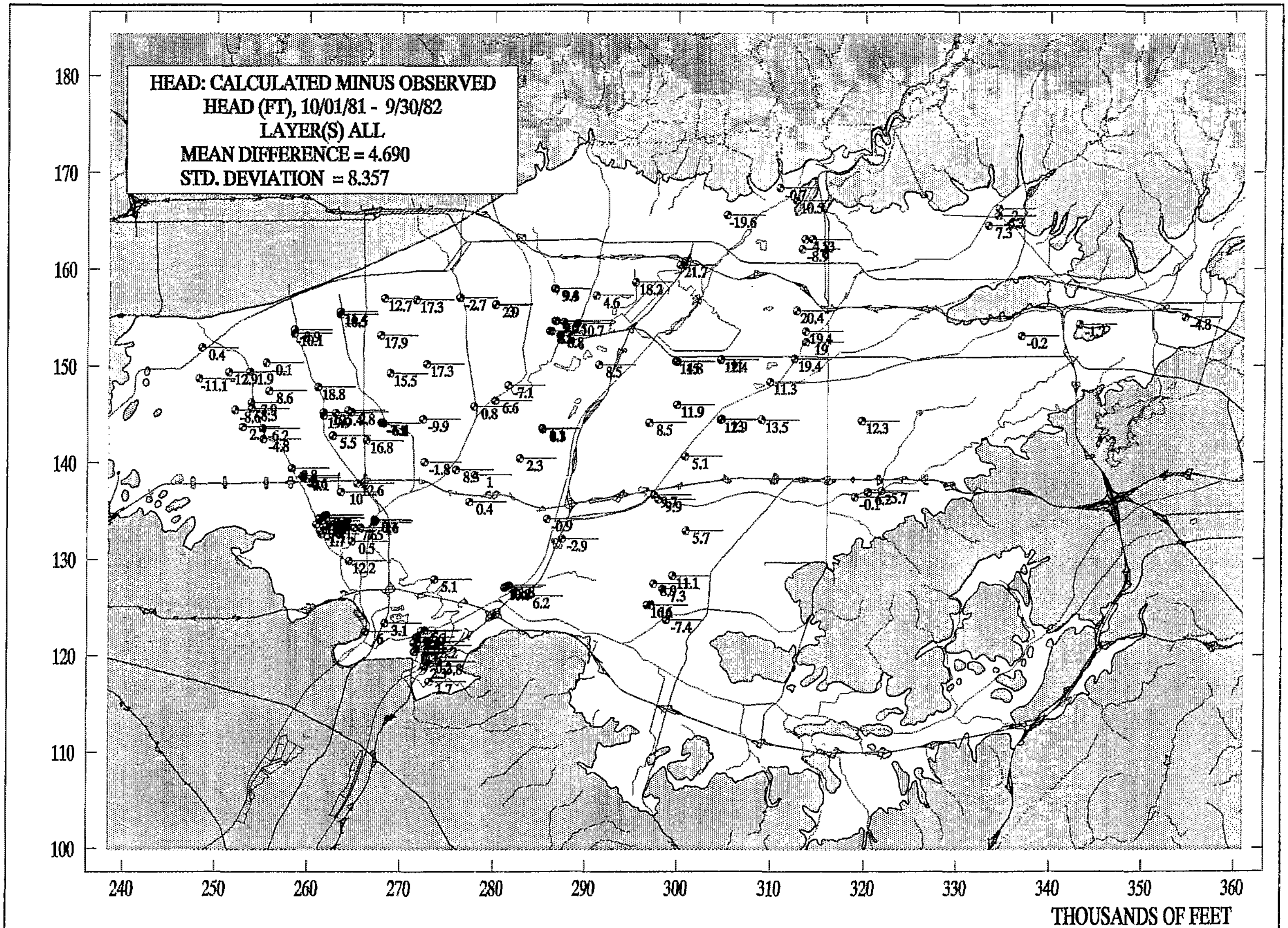



| | | |
|---|---|---|
| FIGURE 5-44 | **Sensitivity Analysis Case 2**<br>Hydraulic Conductivities Reduced by 50 ft/day in Center of Basin<br>Calculated Minus Observed Water Levels<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>*environmental engineers, scientists, planners, & management consultants* |




| FIGURE 5-45 | Sensitivity Analysis Case 3<br>Hydraulic Conductivities Reduced by 100 ft/day in Center of Basin<br>Calculated Minus Observed Water Levels<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>*environmental engineers, scientists, planners, & management consultants* |
|---|---|---|

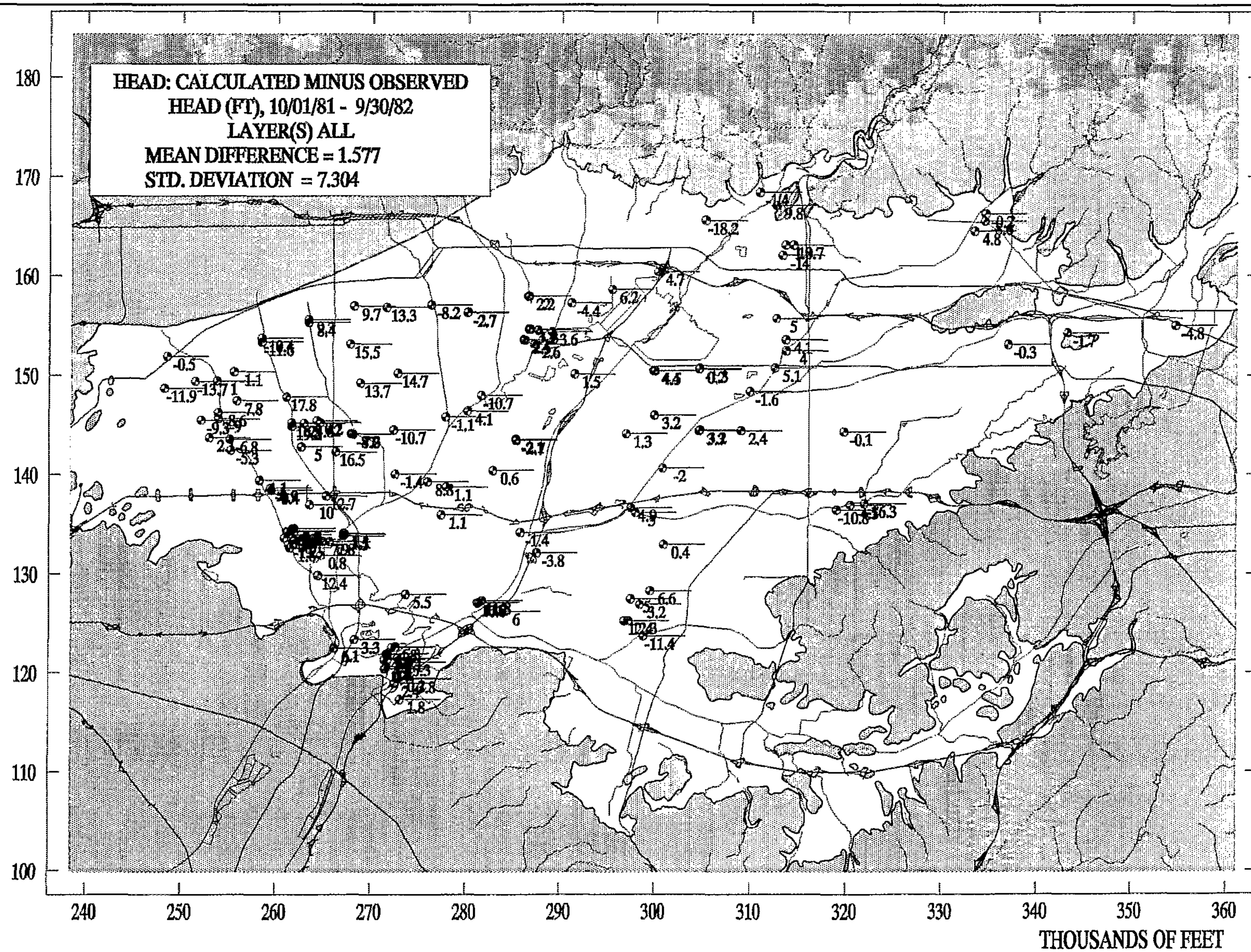



FIGURE
5-46

Sensitivity Analysis Case 4
Fault Gap Centered over the San Gabriel River
Calculated Minus Observed Water Levels
Baldwin Park Operable Unit Pre-Remedial Design

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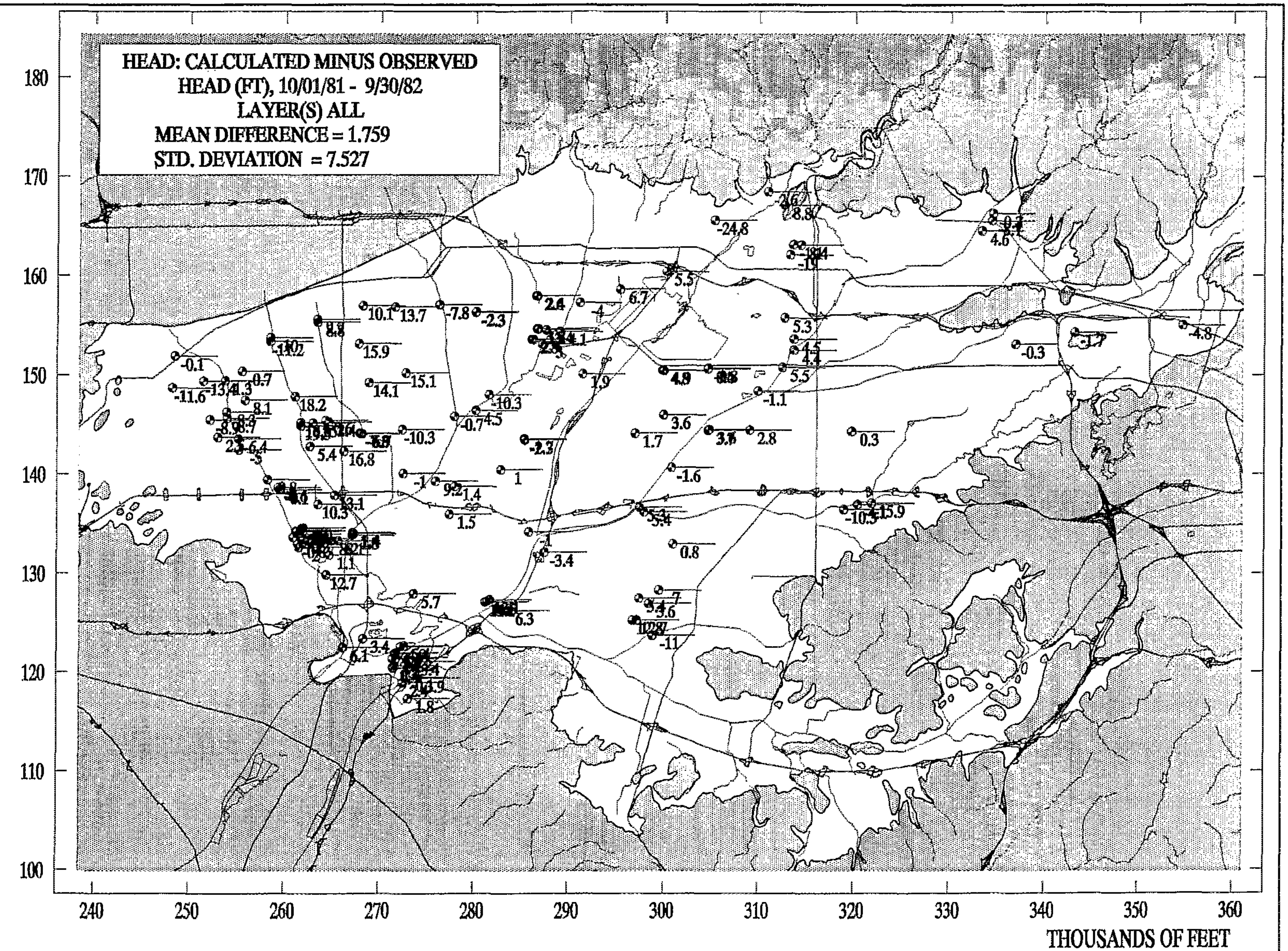


| | | |
|---|---|---|
| FIGURE 5-47 | Sensitivity Analysis Case 5<br>Fault Gap Extended Along Entire San Gabriel Canyon Opening<br>Calculated Minus Observed Water Levels<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |

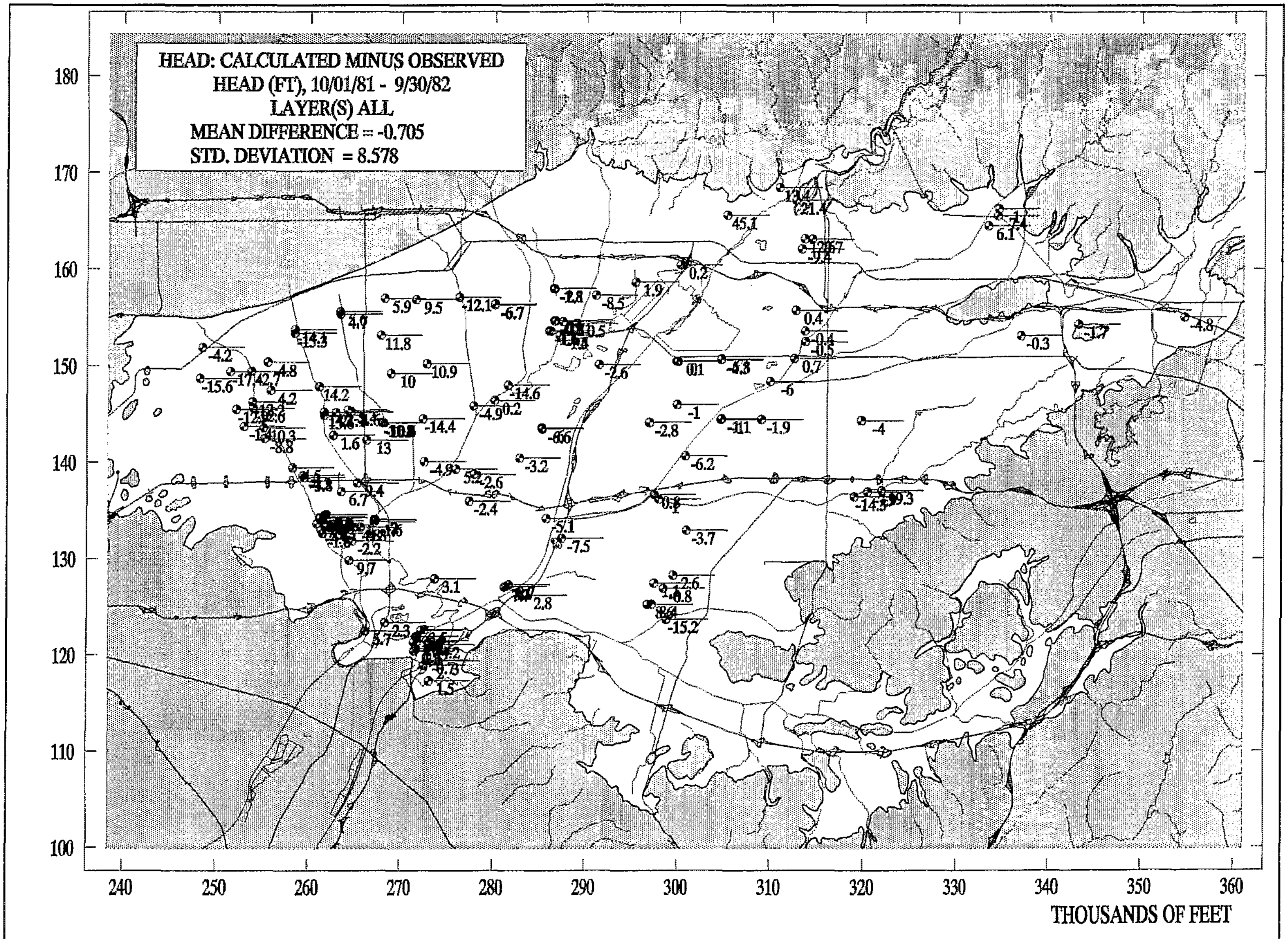


FIGURE 5-48

Sensitivity Analysis Case 6
Fault Gap Centered over VOC Plume
Calculated Minus Observed Water Levels
Baldwin Park Operable Unit Pre-Remedial Design

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## 5.3 Simulation of Containment/Extraction Alternatives

The performance of a range of proposed extraction alternatives was evaluated by simulating the containment that would be achieved by each of the alternatives over a 12-year time period. The simulations were performed using the calibrated flow model presented in Section 5.2, in conjunction with a particle tracking approach to illustrate the effective capture area of each extraction well.

The goal of the extraction alternatives is to inhibit migration of the VOC plume in the Baldwin Park Operable Unit. The horizontal extent of the plume to be contained is illustrated in Figure 5-49 which shows a plan view map of the generalized distribution of TCE concentrations greater than 50 µg/l as determined from the VOC data obtained in September 1996 from the multi-port wells, and from the October 1996 sampling of the production wells. This distribution is being used to represent the horizontal and vertical extent of groundwater contamination targeted for containment. TCE concentrations are used to represent the extent of the VOC plume because :

1. TCE is the most commonly occurring VOC with the highest concentrations in the vicinity of the proposed extraction locations, and

2. The horizontal extent of TCE is slightly greater than PCE. Combined these two VOCs represent the majority of VOC mass in the groundwater within the BPOU.

The vertical distribution of TCE is shown in Figure 5-50, a cross-section running along the center of the plume.

The performance of each of the extraction alternatives was evaluated by simulating the capture attained for a 12-year period of transient flow, with the pumping for the proposed alternative superimposed on the historic 1982-1994 recharge and pumping conditions. This transient period incorporates a wide range of pumping and recharge conditions in the basin.

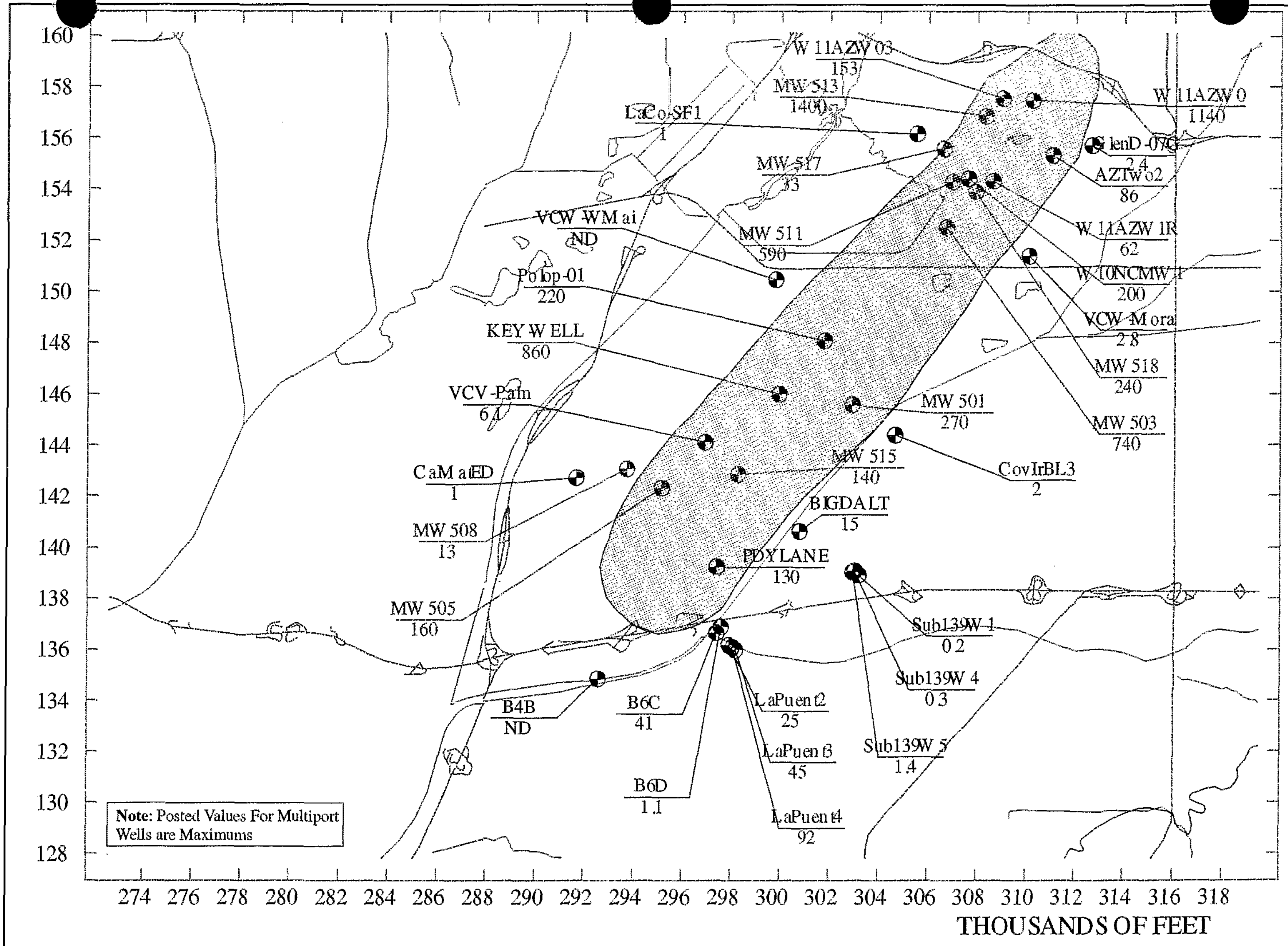
The historic pumping, varied on a quarterly basis, was maintained at all wells in the San Gabriel Basin with the following exceptions:

- Pumping at municipal well Glendora 07G, which lies in the core of Subarea 1, was assumed to be zero.

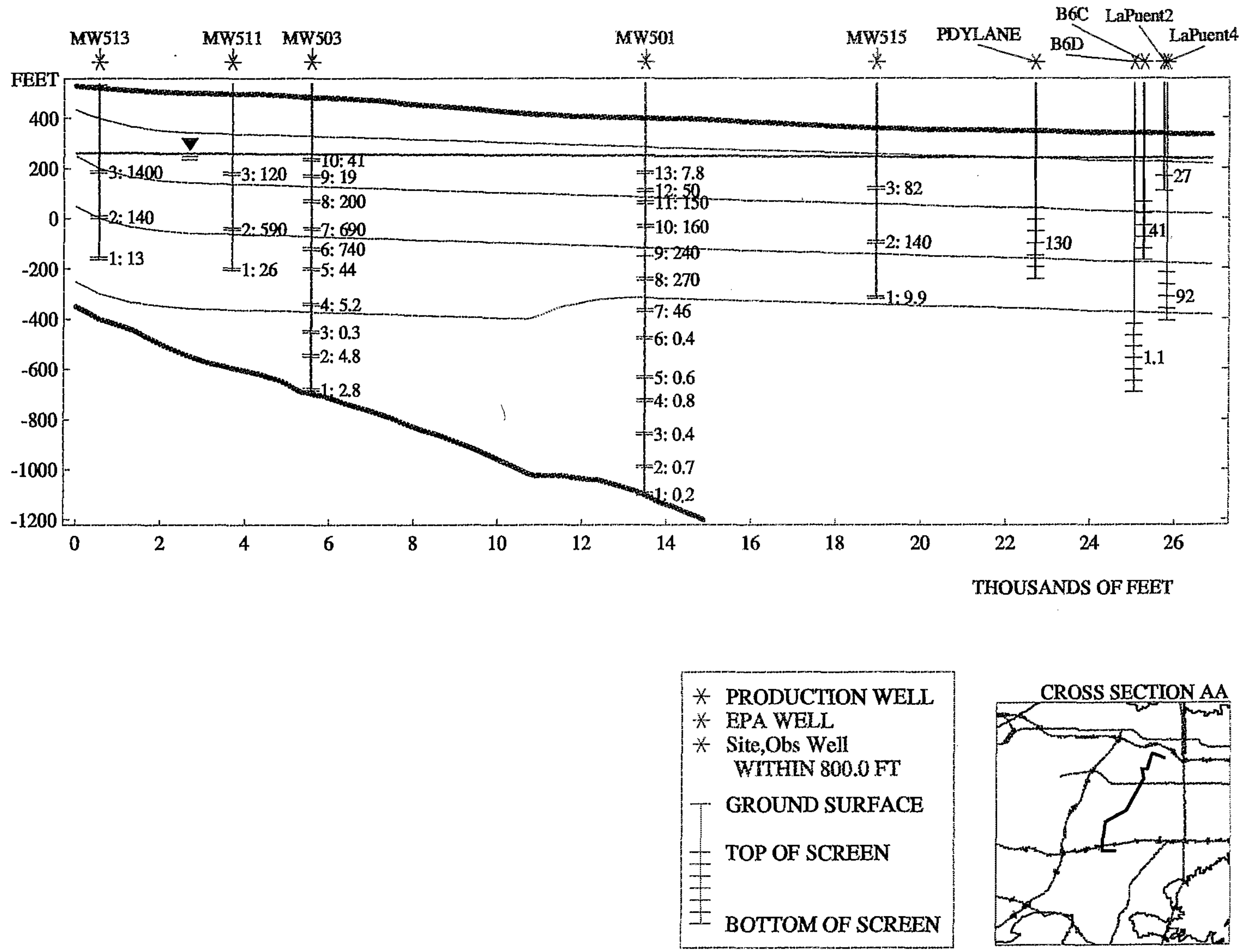
- Pumping at the Arrow/Lante wells was also assumed to be zero.

The shutdown of each of these wells is consistent with present plans for future operation at these locations.

Pumping rates at the SGVWC B6 wellfield and Big Dalton were also maintained at their historic levels, except for those simulations where they are included in the proposed extraction scheme.




| FIGURE 5-49 | Generalized TCE Distribution Greater > 50 ug/l<br>Posted TCE Values For September and October 1996 Sampling<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|




| | | |
|---|---|---|
| FIGURE 5-50 | Cross Section Showing Average TCE Values (ug/l)<br>September-October 1996<br><br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |

For each of the alternatives, the recharge water imported to fulfill the requirements of the Main San Gabriel Watermaster requirements was spread at various spreading basins as defined in the Baldwin Park Water Delivery Plan (Three Valleys Municipal Water District, January 1996). In this plan, 19,000 gpm was spread at the Santa Fe Spreading grounds when the water level at the Key Well was less than 250 ft, and spreading occurred at the eastern spreading grounds (Little Dalton, San Dimas and Citrus) when water levels at the key well were above 250 ft. During these periods of spreading in the eastern basin, recharge rates are generally less than 19,000 gpm, and the 'banked' recharge water is spread at Santa Fe Spreading Grounds once the water level at the Key Well drops. Full details of the recharge allocations are included in the EIR for the Baldwin Park Water Delivery Plan (Three Valleys Municipal Water District, January 1996).

### 5.3.1 Containment Scenarios

The following five extraction alternatives were evaluated.

**Case 1:** This is the basic ROD defined extraction alternative with the following characteristics:

Subarea 1: Cluster 10 - 4,500 gpm, Cluster 13 - 4,000 gpm
Total Subarea 1 pumping:8,500 gpm
Subarea 3: Cluster 5 - 3,500 gpm, Paddy Lane - 3,500 gpm
Big Dalton - 3,500 gpm
Total Subarea 3 pumping: 10,500 gpm
Total Extraction Pumping: 19,000 gpm

**Case 2:** This is a modification to the basic ROD defined extraction alternative with the following characteristics:

Subarea 1: Cluster 10 - 4,500 gpm, Cluster 13 - 4,000 gpm
Total Subarea 1 pumping:8,500 gpm
Subarea 3: Paddy Lane - 3,500 gpm, Big Dalton - 3,500 gpm
B6 - 3,500 gpm, B6C at 1,000 gpm, and B6D at 2,500 gpm
Total Subarea 3 pumping: 10,500 gpm
Total Extraction Pumping: 19,000 gpm

**Case 3:** This is another modification to the basic ROD defined extraction alternative with the following characteristics:

Subarea 1: Cluster 10 - 4,500 gpm, Cluster 13 - 4,000 gpm
Total Subarea 1 pumping: 8,500 gpm

Subarea 3: Cluster 5 - 3,500 gpm, Paddy Lane - 3,500 gpm
B6 3,500 gpm - B6C at 1,000 gpm, and B6D at 2,500 gpm
Total Subarea 3 pumping: 10,500 gpm
Total Extraction Pumping: 19,000 gpm

**Case 4:** In this alternative, Cluster 5 is relocated to the south and west to better contain the southern extent of the VOC plume. Cluster 13 is moved to the south, to be aligned with Cluster 10. In addition, total extraction pumping in Subarea 3 is increased to provide better control of migration across the width of the plume on an alignment running through Cluster 5 and Paddy lane. Iterative simulations indicated that pumping of 13,000 gpm is required to provide containment in Subarea 3. For this alternative, there is a commensurate reduction in pumping in Subarea 1 to maintain overall extraction at the 19,000 gpm limit. The alternative has the following characteristics:

Subarea 1: Cluster 10 - 4,500 gpm, Cluster 13 - 1,000 gpm
Total Subarea 1 pumping: 5,500 gpm

Subarea 3: Cluster 5 (relocated) - 5,000 gpm, Paddy Lane - 5,500 gpm
B6 - 3,000 gpm - B6C at 1,000 gpm, and B6D at 2,000 gpm
Total Subarea 3 pumping: 13,500 gpm

Total Extraction Pumping: 19,000 gpm

**Case 5:** The objective of Case 5 is to increase the width of containment in Subarea 3. This was achieved by relocating Cluster 5 further west, and the addition of a new extraction cluster (named 5B) located between Paddy Lane and Cluster 5. B6 is not a part of the remedial scheme in this case. Overall extraction pumping remains at 19,000 gpm. The alternative has the following characteristics:

Subarea 1: Cluster 10 - 4,500 gpm, Cluster 13 - 1,000 gpm
Total Subarea 1 pumping: 5,500 gpm

Subarea 3: Cluster 5 (relocated) - 4,000 gpm,
Cluster 5B - 5,500 gpm, Paddy Lane - 4,000 gpm
Total Subarea 3 pumping: 13,500 gpm
Total Extraction Pumping: 19,000 gpm

### 5.3.2 Results of Simulation of Extraction Alternatives

For each of the above alternatives, the capture to be achieved during the 12-year transient was simulated by evaluating the ability of the alternative to capture 'particles' (representing VOCs) which were started at an elevation of +50 ft (MSL) throughout the BPOU area. The starting locations of the particles which were removed from the system at an extraction well during the simulation period are shown on the capture plots presented in Figures 5-51 through 5-55. The extraction wells used in each alternative are also shown on these figures. In each of these plots, the containment achieved by the extraction scheme is clearly defined. These figures also include the limits (defined as 50 ppb) of the TCE plume based on the September/October 1996 data.

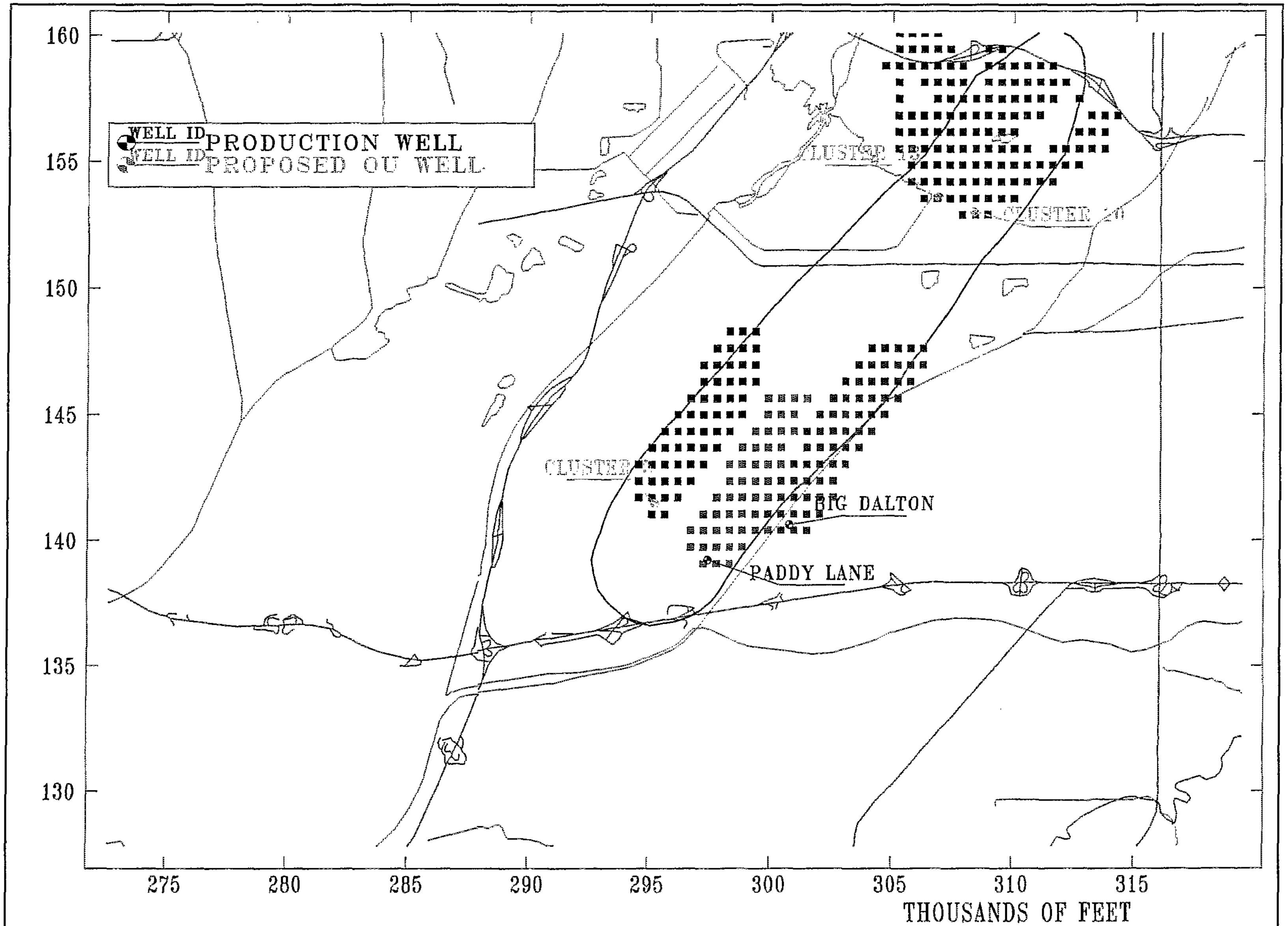



FIGURE 5-51

Extraction Simulation Case 1
12 Year Transient Capture Zone
50 ppb TCE Contour
Baldwin Park Operable Unit Pre-Remedial Design

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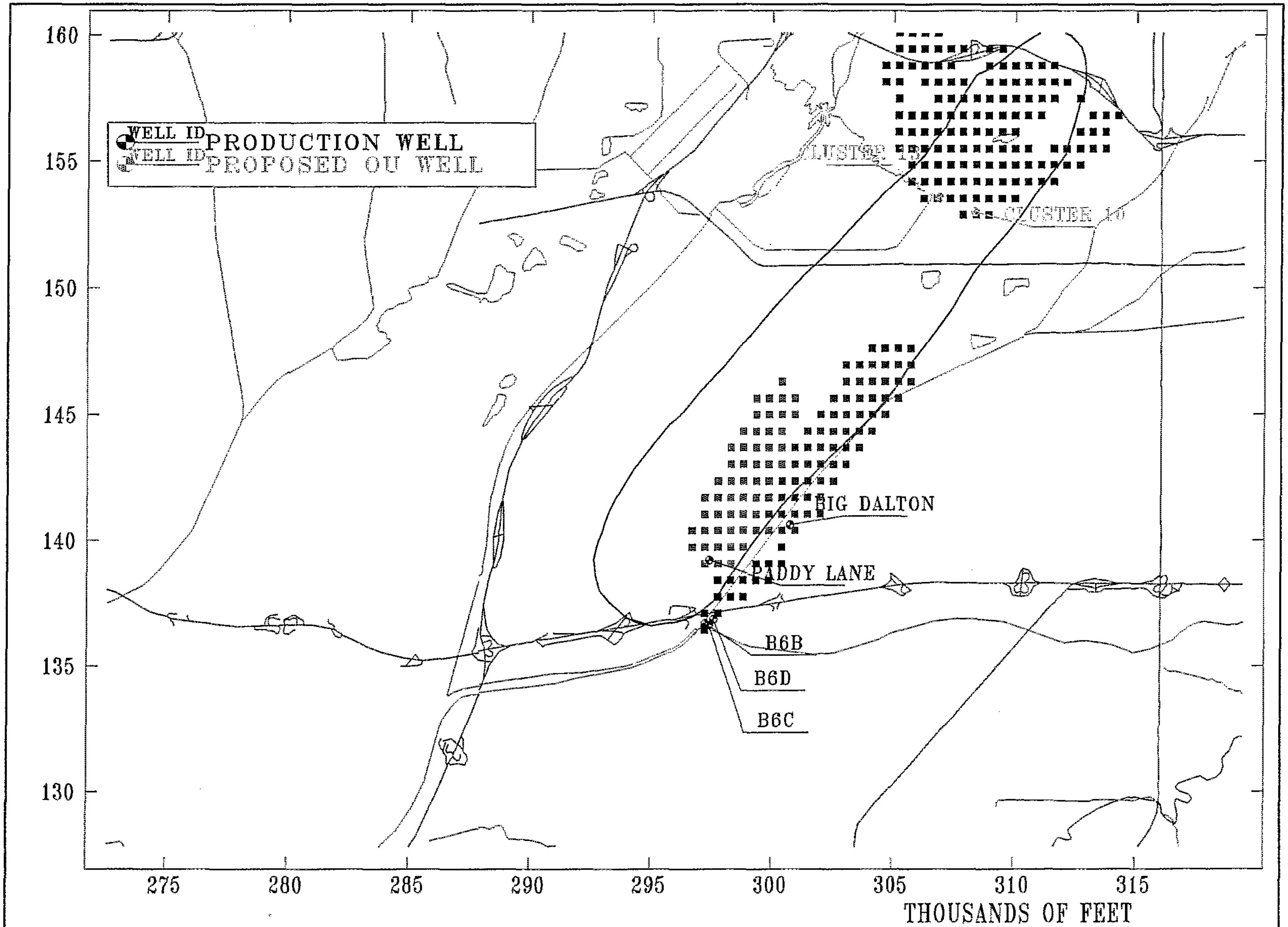


| FIGURE 5-52 | Extraction Simulation Case 2<br>12 Year Transient Capture Zone<br>50 ppb TCE Contour<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|

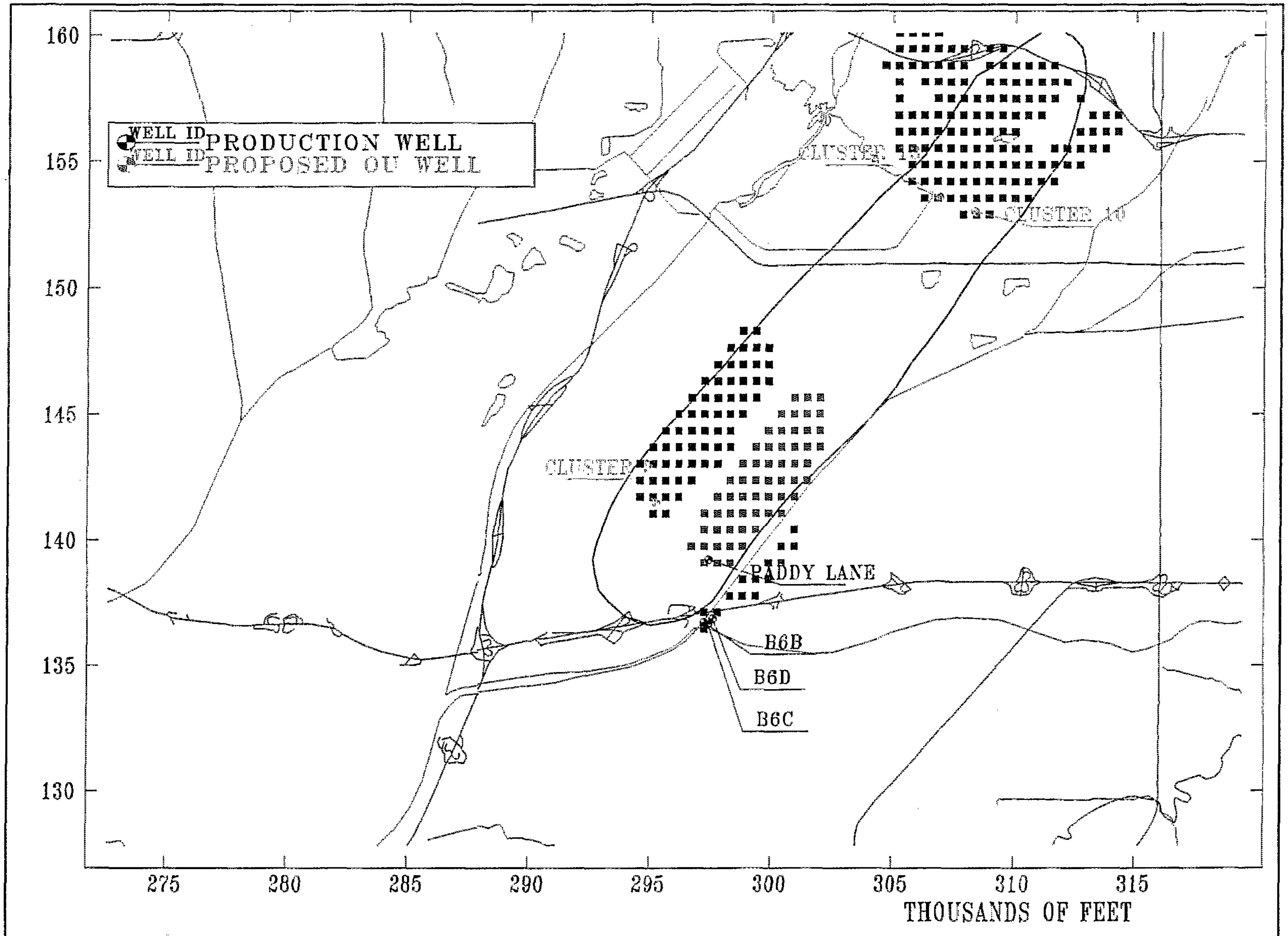


FIGURE
5-53

Extraction Simulation Case 3
12 Year Transient Capture Zone
50 ppb TCE Contour
Baldwin Park Operable Unit Pre-Remedial Design

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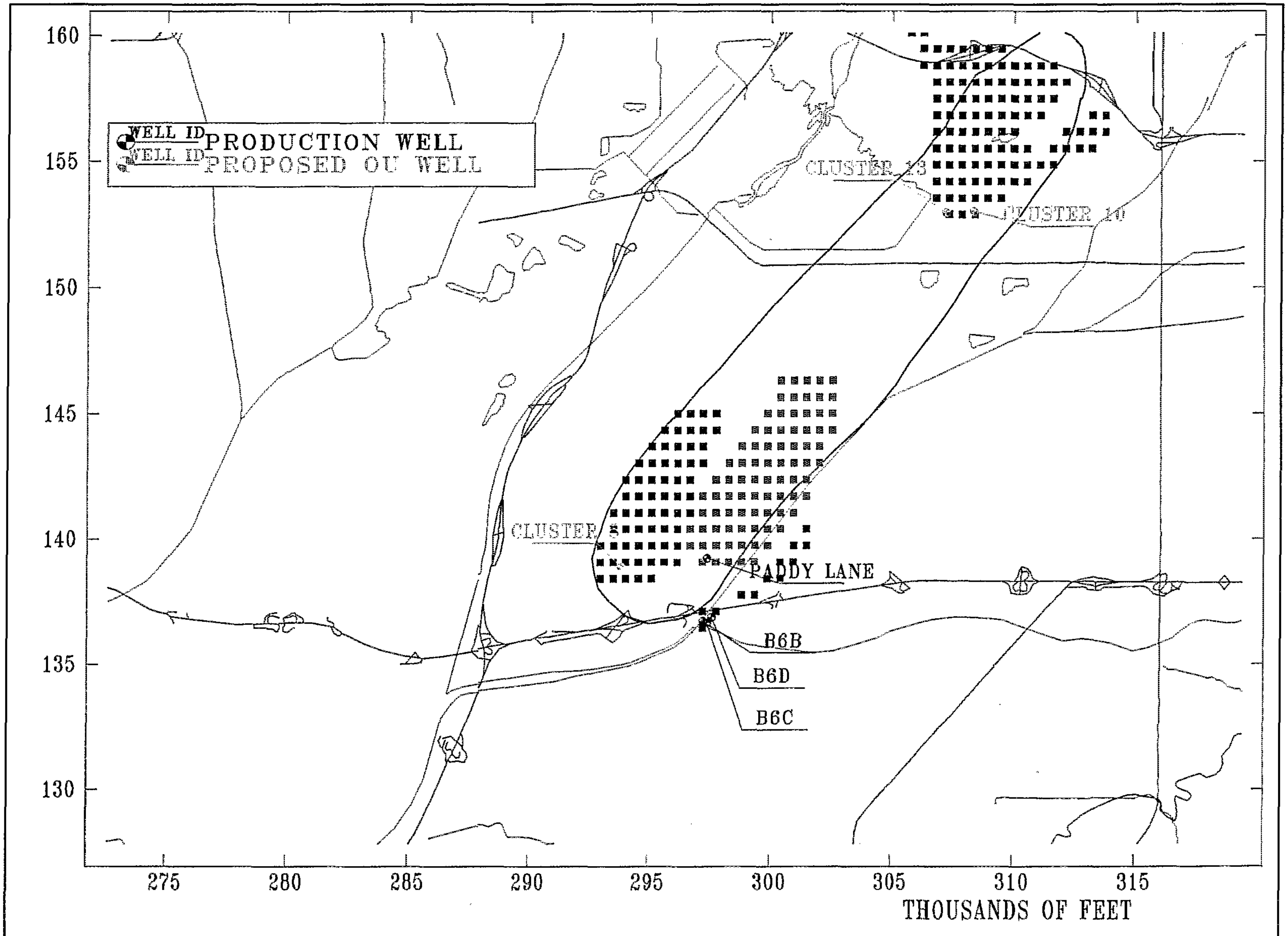
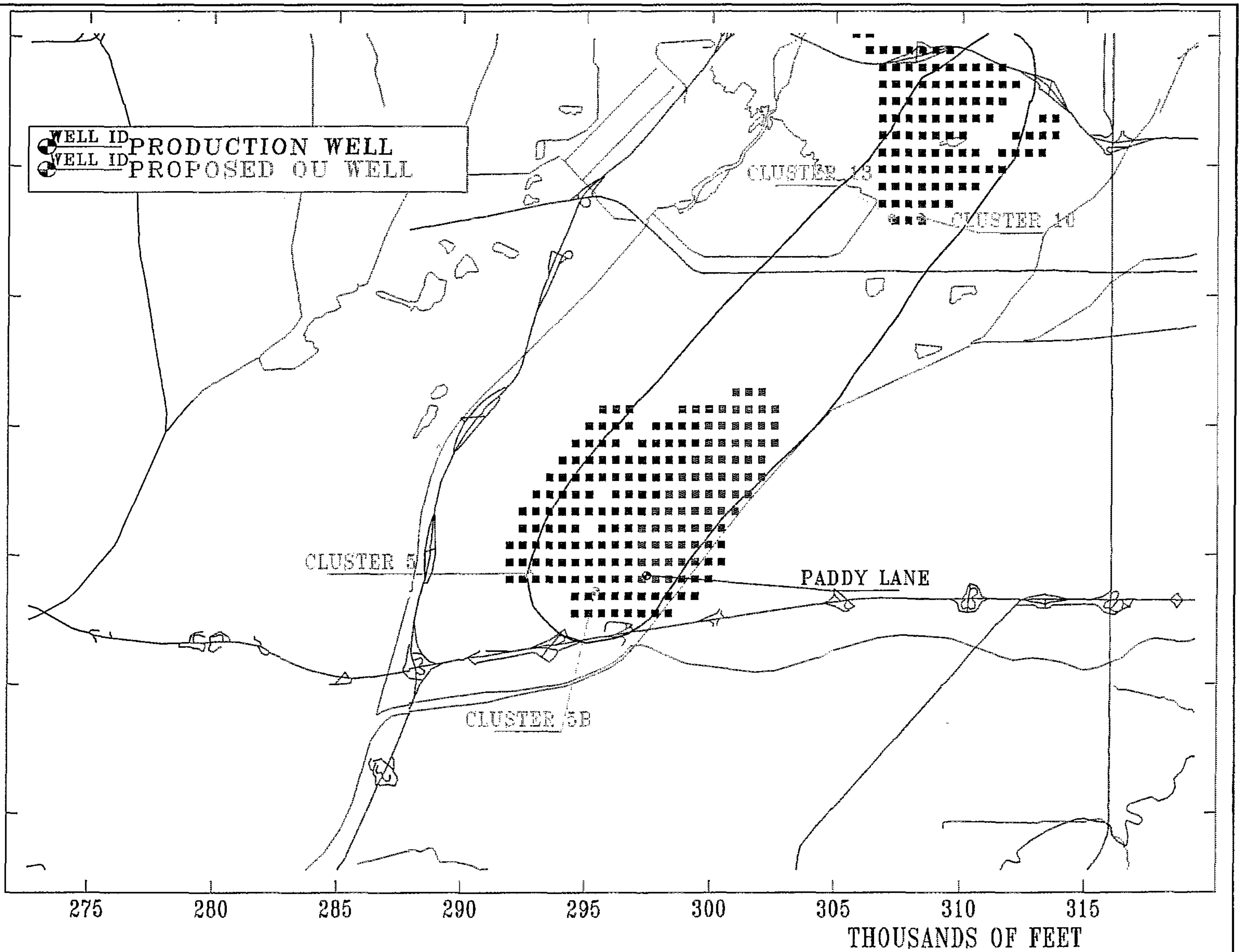



| | | |
|---|---|---|
| FIGURE 5-54 | Extraction Simulation Case 4<br>12 Year Transient Capture Zone<br>50 ppb TCE Contour<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |




| FIGURE 5-55 | Extraction Simulation Case 5<br>12 Year Transient Capture Zone<br>50 ppb TCE Contour<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |
|---|---|---|

The following characteristics of the extraction alternatives are observed by reviewing these capture plots:

**Subarea 1:**

- The alternatives using the basic ROD pumping of 8,500 gpm at Cluster 10 and 13 (Cases 1, 2 and 3) achieve good containment in Subarea 1. Gaps in the capture in Subarea 1 are a result of production pumping at AZ-Two 2, Miller 1 and Santa Fe 1. (These wells are displayed on Figure 5-49.)

- Pumping at the reduced rates of 5,500 gpm total in Subarea 1 (Cases 4, and 5) also contains the plume in this area.

**Subarea 3:**

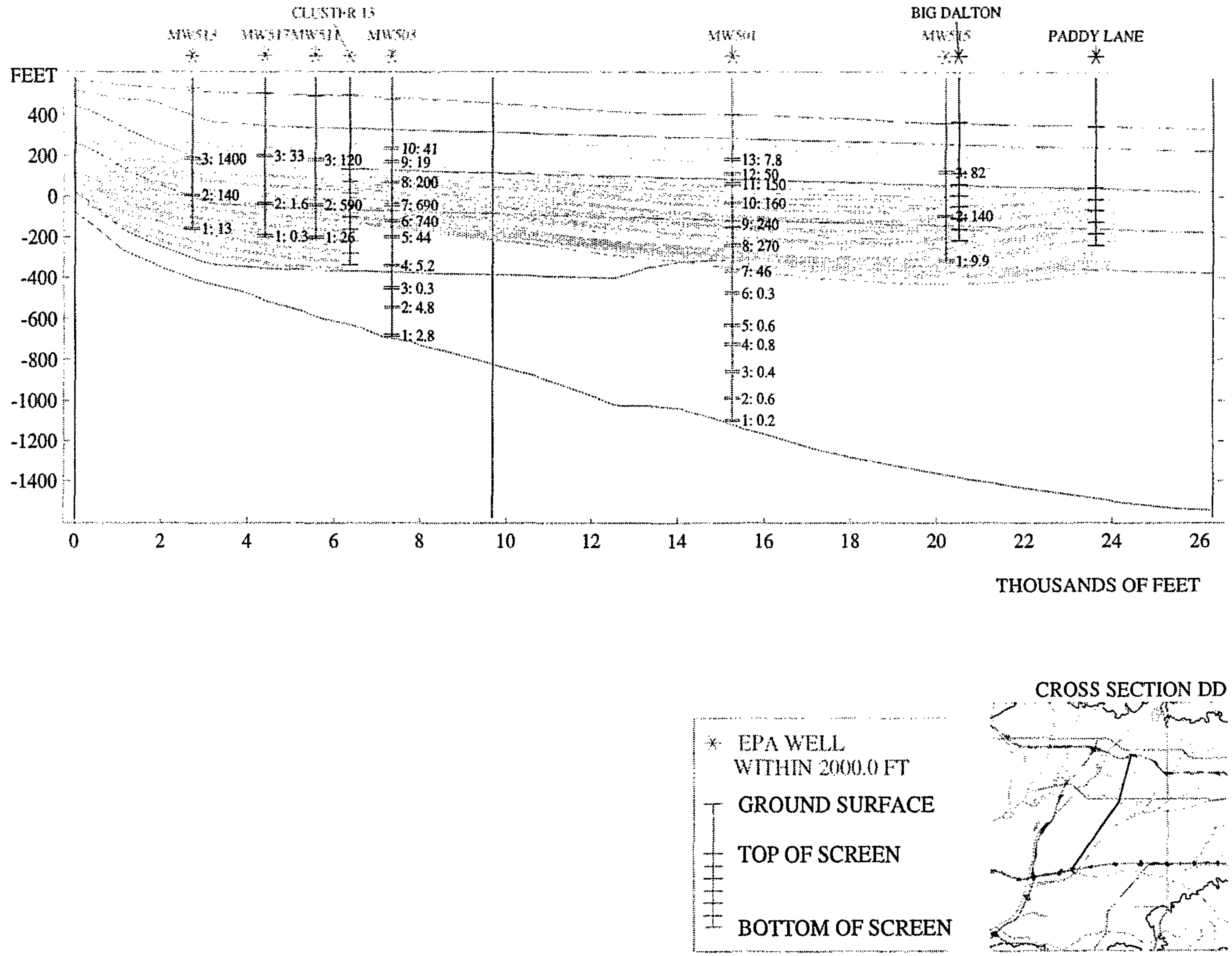
- None of the extraction alternatives evaluated provides full containment in Subarea 3.

- The relocated Cluster 5, shown in Cases 4 and 5 (see Figures 5-54 and 5-55 provides better containment to the south than the initial location for this proposed cluster shown in Cases 1,2 and 3 (see Figures 5-51 through 5-53).

- Use of the B6 cluster is not an effective alternative to use of Paddy Lane and Big Dalton. This is shown on the capture plots for Cases 2 through 4 (Figures 5-52 through 5-54). In particular, the need to pump approximately 70 percent of the water from the deep screens in B6D (screened at 800-1000 ft bgs), significantly reduces the effectiveness of this location in controlling the higher concentration zones in the plume, which are located generally 500-700 ft bgs in this vicinity.

Figure 5-56 is a cross-section showing the flowlines entering the extraction wells based on 12-year average conditions, and the Case 1 extraction scheme. The observed TCE distribution is superimposed on this plot also. This plot indicates that the proposed extraction wells vertically contain the higher TCE concentrations, those greater than 50 μg/l observed in the BPOU.

Evaluation of these extraction scenarios indicated that Case 5 best achieves the remedial action objectives described above. Specifically, the Case 5 extraction scenario effectively demonstrates containment of TCE at concentrations greater than 50 μg/l in Subareas 1 and 3, and based on our judgement of existing data, we further believe that we have containment of TCE greater than 5 μg/l in Subarea 1 and Subarea 3.




| FIGURE 5-56 | 75-Year Particle Back Tracks From Extraction Wells<br>ROD 1 Extraction Pumping - With 12 Year Average Conditions<br>September-October 1996 TCE Values (ug/l)<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>*environmental engineers, scientists, planners, & management consultants* |
|---|---|---|

## 5.4 Sensitivity Simulations of the Case 5 Extraction Scheme

The Case 5 extraction scheme was chosen as the baseline extraction scheme for the sensitivity simulations. The following simulations were made to evaluate the sensitivity of the 12 year capture zone to changes in hydraulic conductivities and pumping. These simulations were:

**Extraction Sensitivity Case 1:** The remedial extraction rates are decreased uniformly by 10%. All applied recharge was unchanged.

**Extraction Sensitivity Case 2:** The remedial extraction rates are decreased uniformly by 20%. All applied recharge was unchanged.

**Extraction Sensitivity Case 3:** The horizontal hydraulic conductivities in the BPOU area are increased by 10% to 385 ft/day in layers 2, 3, 4 and 5 of the model (approximately the upper 800 feet of the aquifer). The vertical anisotropy ratio of 30:1 is maintained.

**Extraction Sensitivity Case 4:** The horizontal hydraulic conductivities in the BPOU area are decreased by 10% to 315 ft/day in layers 2, 3, 4 and 5 of the model. The vertical anisotropy ratio of 30:1 is maintained.

**Extraction Sensitivity Case 5:** Water supply production well pumping at BPOU wells is simulated at the maximum of the projected pumping presented in the Watermaster Five-Year Water Quality and Supply Plan (November, 1995). The wells include: Suburban 139, B4 and B6, AZ-2, Arrow/Lante, La Puente, Covina Irrigating Co. and Conrock East and West Durbin. Glendora 07G which was projected to have zero production is simulated at its historical pumping rates. The average historical rates (for the 12 year transient period) and the projected rates for these wells are tabulated in the following table.

| *Well Group* | *Average Historical Pumping Rate (gpm)* | *Projected 5 Year Maximum Pumping Rate (gpm)* |
|---|---|---|
| SGVWC B4 | 2352 | 50 |
| SGVWC B6 | 1941 | 3956 |
| Suburban 139 | 6413 | 7126 |
| La Puente | 1281 | 1883 |
| AZ-Two2 | 450 | 784 |
| Arrow/Lante | 425 | 2400 |
| Covina Irrig. | 0.5 | 3340 |
| Conrock East /West Durbin | 820 | 375 |
| Big Dalton | 0.05 | 2790 |

**Extraction Sensitivity Case 6:** Remedial extraction at Paddy Lane is simulated to a depth of 700 feet bgs (similar to the extraction depths simulated at the proposed Cluster 5 and 5B wells).

The resulting containment zones for each of these cases are presented in Figures 5-57 through 5-62. The following observations are made:

- In Sensitivity Case 1 the capture zone presented in Figure 5-57, is slightly degraded from the Case 5 Extraction Simulation (Figure 5-55). This is particularly apparent in Subarea 3.
- In Sensitivity Case 2 (Figure 5-58) the capture zone is slightly more degraded as a result of the additional 10% reduction in remedial pumping, now a total of 20% less pumping than in Extraction Simulation Case 5. Nearly a complete gap has been created between extraction wells Cluster 5 and Cluster 5B.
- Increasing the horizontal hydraulic conductivities by 10% in the central portion of the basin has little effect upon the capture zone. There is virtually no difference between the capture zones presented in Figures 5-55 and 5-59.
- A decrease in horizontal hydraulic conductivities of 10% in Sensitivity Case 4 has no apparent impact upon the 12 year capture zone. This can be seen by comparing Figures 5-55 and 5-60.
- In Sensitivity Case 5 pumping rates at selected production wells are simulated at the maximum of the Watermaster 5 year projection. The capture zone shown in Figure 5-61 depicts some noticeable differences from the Case 5 Extraction Simulation (Figure 5-55). In Subarea 1 capture is reduced because some areas which had been captured by Cluster 10 are now captured by AZ-Two2. Subarea 3 shows a shifting of the capture zone to the west. Because of reduced pumping at B-4 (relative to historical rates) particles which had been passing to the west of Cluster 5 are now captured by that well. Areas just to the east of the capture zone are being contained by pumping at Big Dalton and B6 which are not considered part of the scheme, and whose Watermaster projected pumping is greater than their historical pumping.
- In Sensitivity Case 6 the pumping allocated to Paddy Lane is distributed over a depth of 700 feet. The resulting capture zone for the particles started at plus 50 ft. MSL shown in Figure 5-62, is not significantly different from the Case 5 Extraction Simulation.

## Summary

The 12 year simulated capture zone is somewhat sensitive to the pumping rate of the remedial extraction wells, and other production wells in the BPOU area. The capture zone does not appear to be sensitive to minor adjustments to the horizontal hydraulic conductivities.

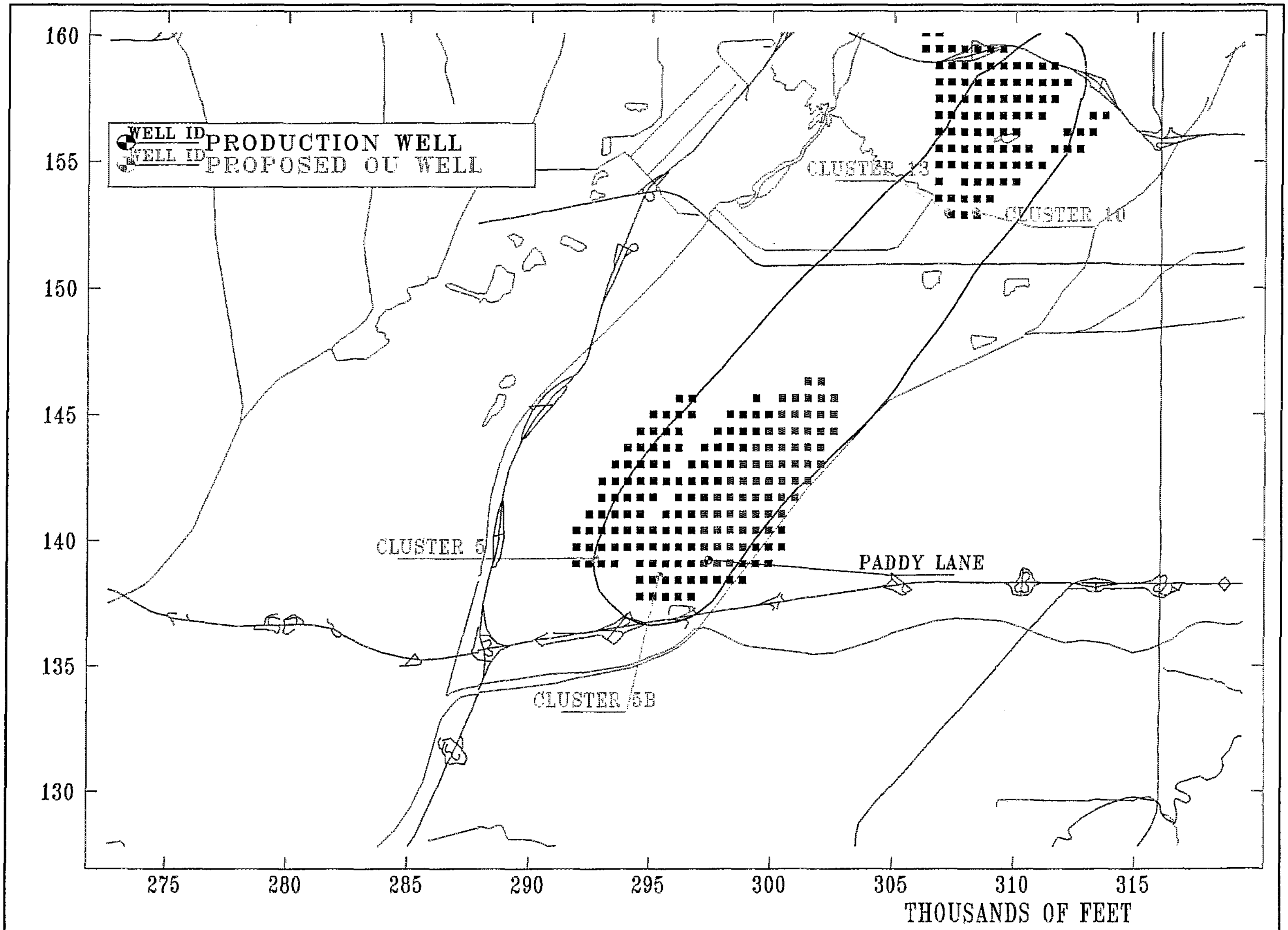



FIGURE 5-57

Extraction Sensitivity Case 1
Remedial Extraction Rates Decreased by 10%
12 Yr Transient Capture Zone - 50 ppb TCE Contour
Baldwin Park Operable Unit Pre-Remedial Design

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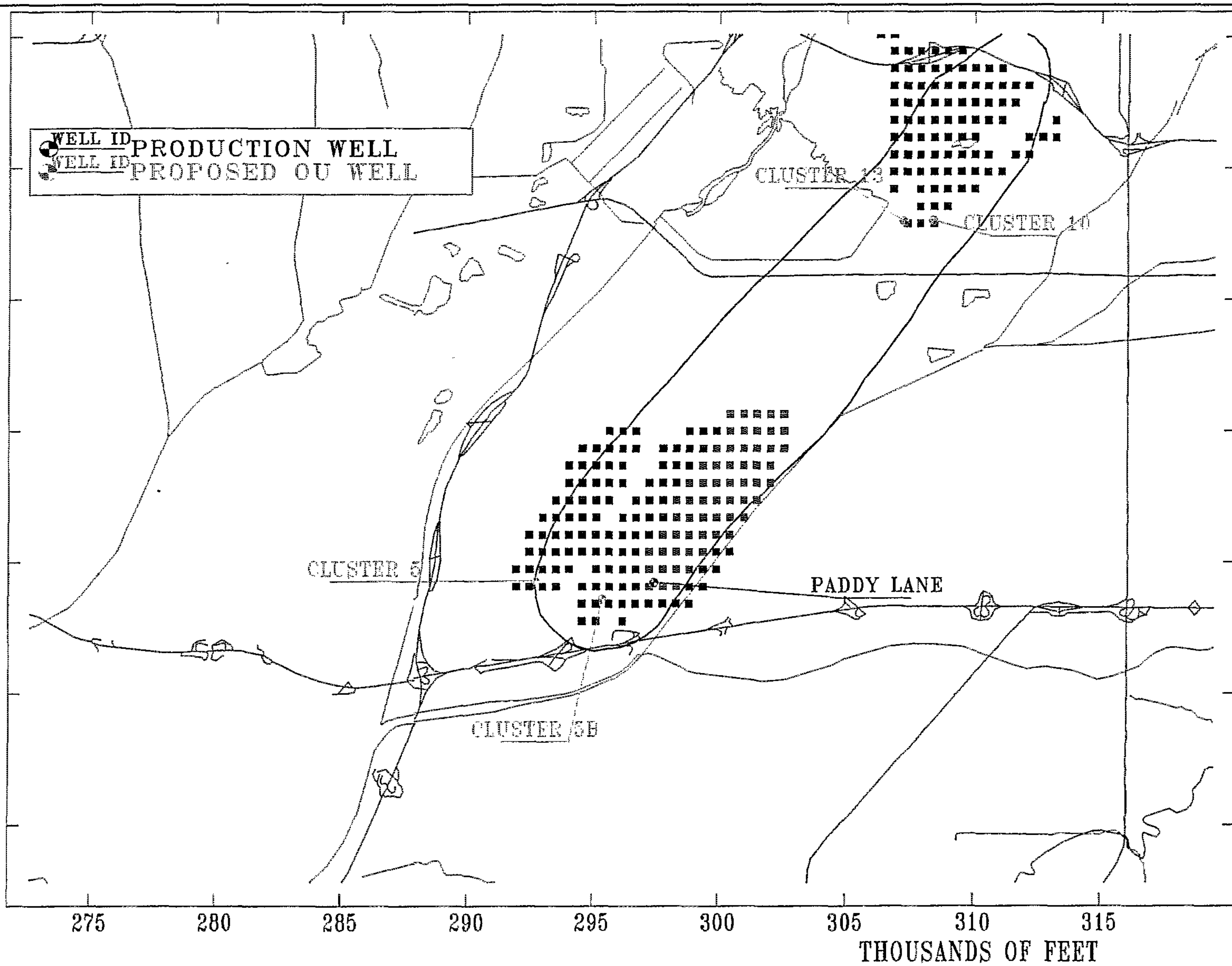


FIGURE 5-58

Extraction Sensitivity Case 2
Remedial Extraction Rates Decreased by 20%
12 Yr Transient Capture Zone - 50 ppb TCE Contour
Baldwin Park Operable Unit Pre-Remedial Design

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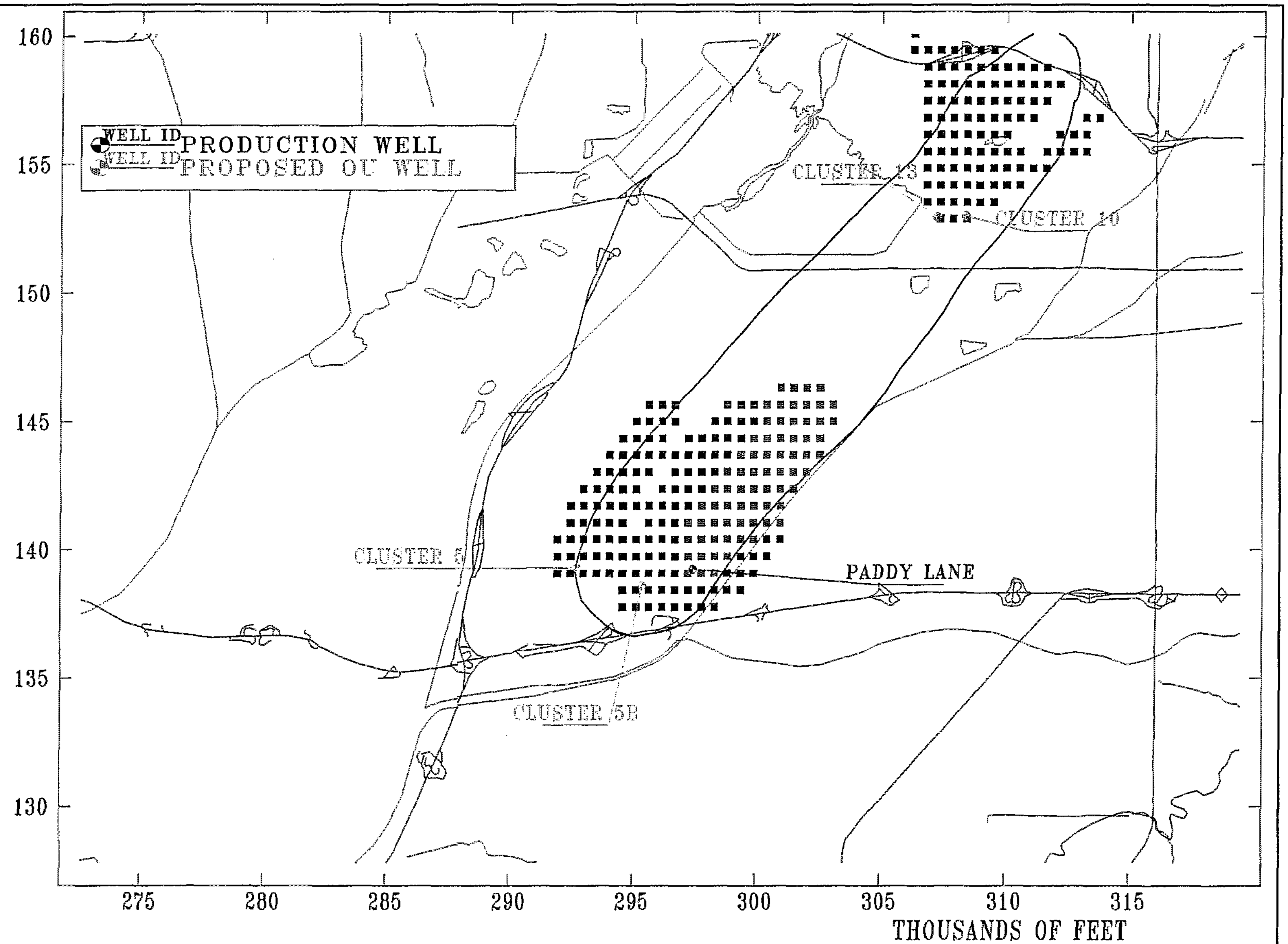
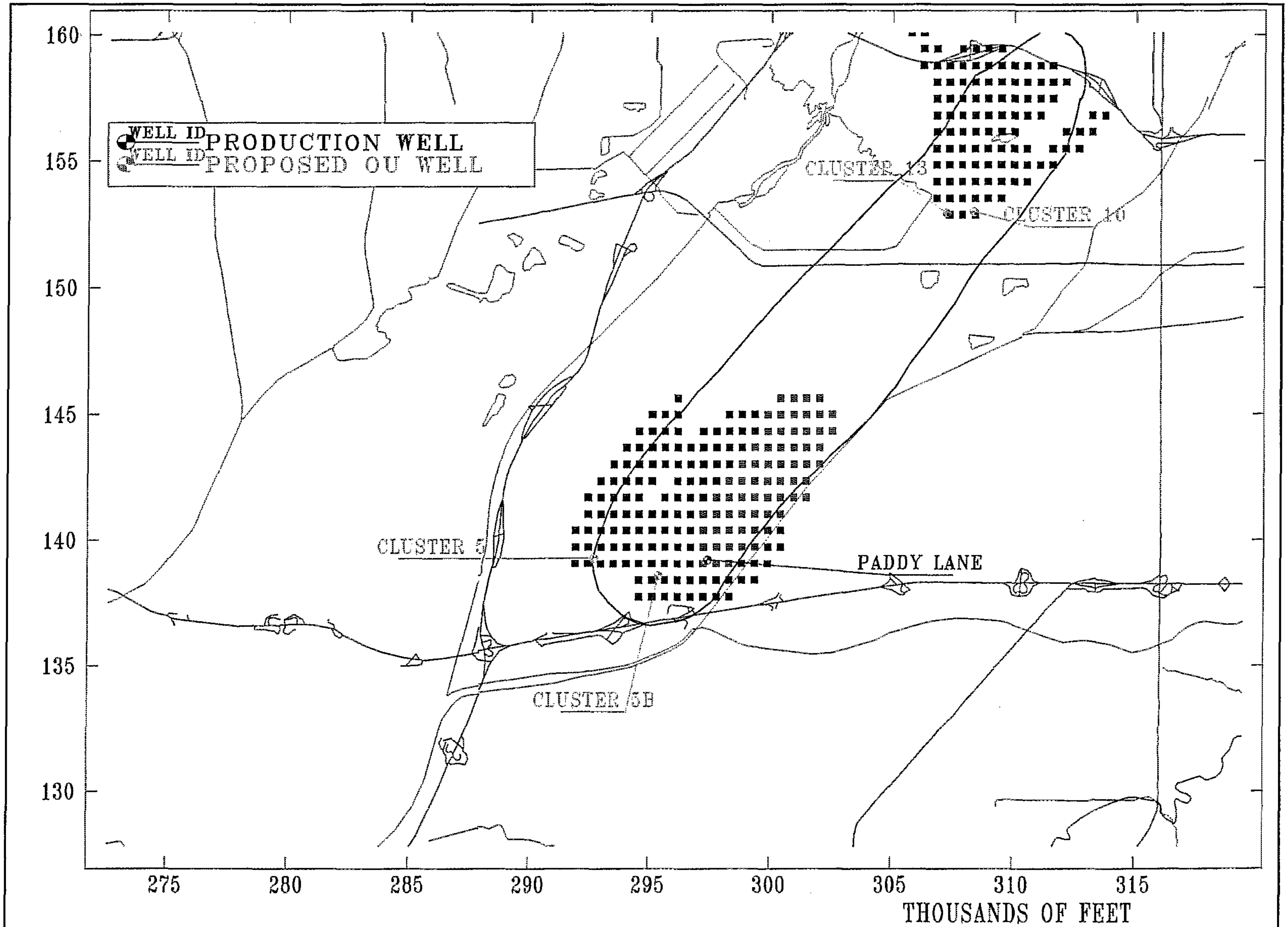



FIGURE 5-59

Extraction Sensitivity Case 3
Kh Increased by 10% in Center of Basin
12 Yr Transient Capture Zone - 50 ppb TCE Contour
Baldwin Park Operable Unit Pre-Remedial Design

CDM
environmental engineers, scientists, planners, & management consultants




| | | |
|---|---|---|
| FIGURE 5-60 | Extraction Sensitivity Case 4<br>Kh Decreased by 10% in Center of Basin<br>12 Yr Transient Capture Zone - 50 ppb TCE Contour<br>Baldwin Park Operable Unit Pre-Remedial Design | CDM<br>environmental engineers, scientists, planners, & management consultants |

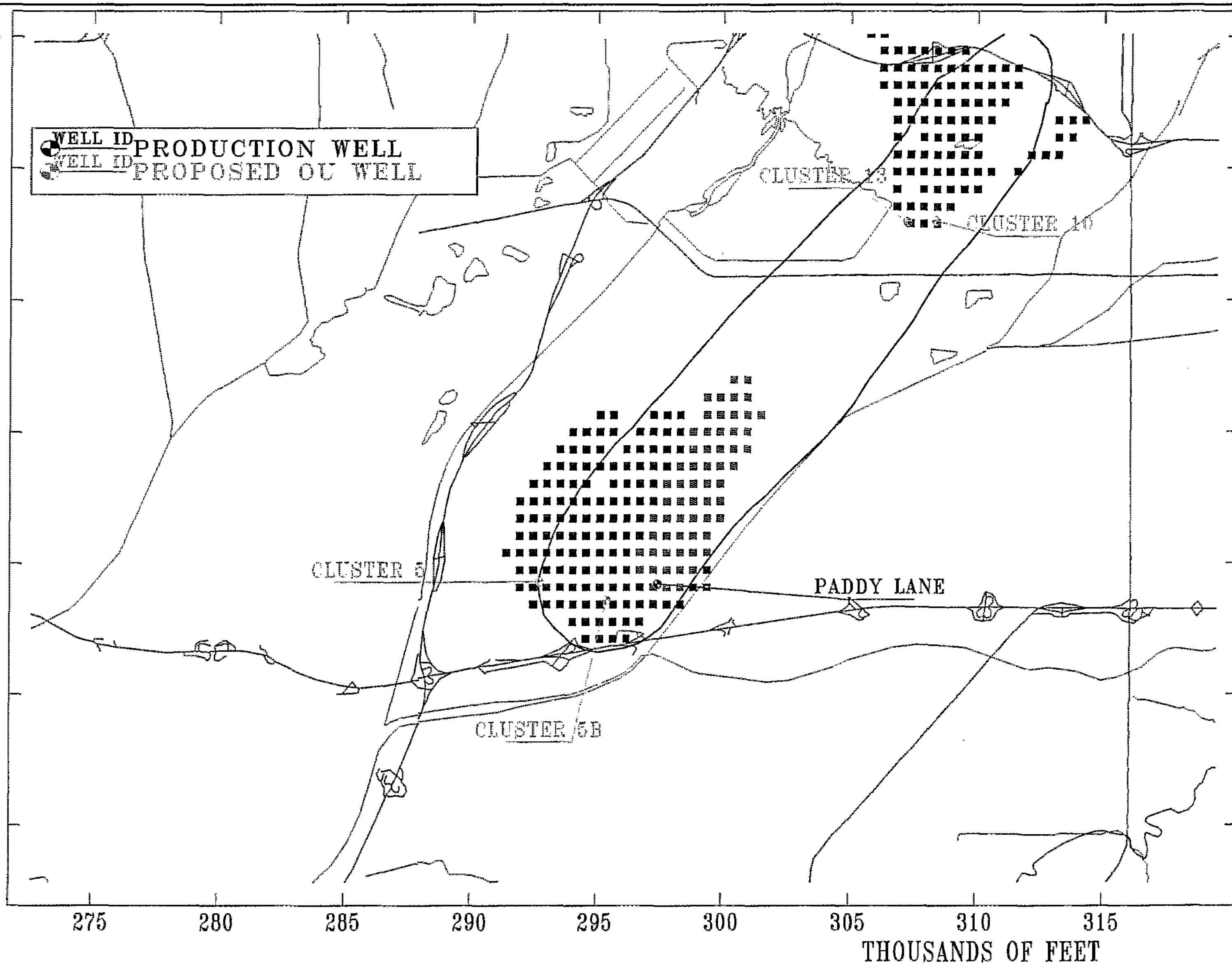



FIGURE 5-61

Extraction Sensitivity Case 5
BPOU Area Wells Simulated at Watermaster Projection
12 Yr Transient Capture Zone - 50 ppb TCE Contour
Baldwin Park Operable Unit Pre-Remedial Design

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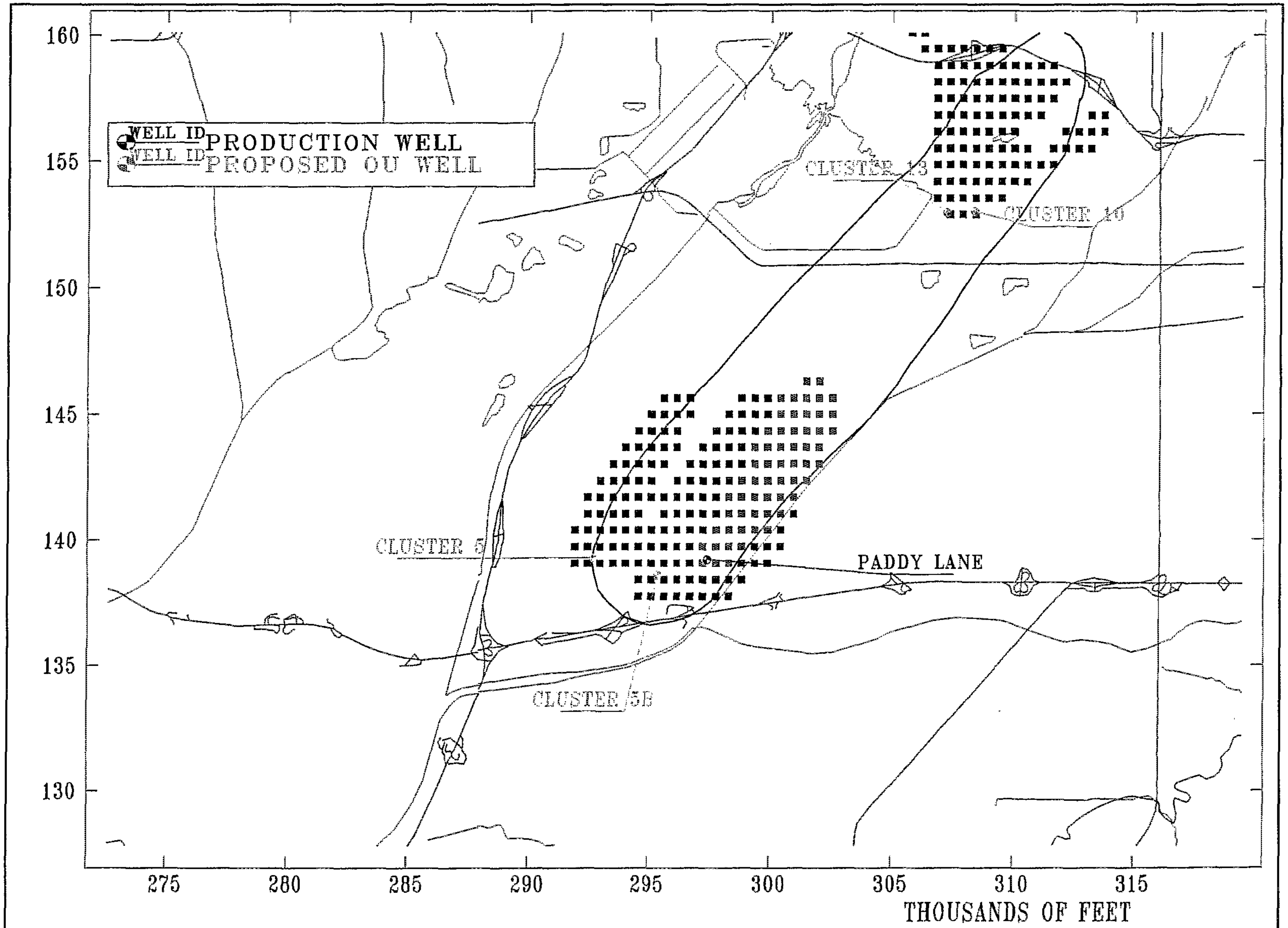


FIGURE 5-62

Extraction Sensitivity Case 6
Paddy Lane Extraction Simulated to Depth 700 ft bgs
12 Yr Transient Capture Zone - 50 ppb TCE Contour
Baldwin Park Operable Unit Pre-Remedial Design

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# 6

# Section Six

# Draft - Section 6
# Summary and Conclusions

The pre-remedial design groundwater monitoring program was completed in conformance with the March 31, 1994 Record of Decision. Specifically, water quality and piezometric data were collected and analyzed to determine the location, depth, well design, and pumping rates for remedial extraction. Furthermore, these data were analyzed to allow computer simulation of various pumping scenarios in order to identify the most effective means to meet the dual ROD objectives of limiting further migration of contaminated groundwater and begin to reduce VOC concentrations in the BPOU groundwater. In addition to these ROD objectives, the evaluation of remedial pumping scenarios necessarily considered the constraints on recharge and demand for water, both of which are critical to the overall success of the project.

These objectives were achieved through the drilling, installation, sampling, and piezometric monitoring of eight new multiport monitoring well; the sampling of site assessment monitoring wells and selected water supply wells; performance of an aquifer testing program; and data evaluation centered around the development and use of a three dimensional groundwater model. These program components were completed in order to evaluate spatial and temporal trends in water quality; changes in groundwater flow as a result of natural and artificial recharge, existing water supply pumpage, and proposed remedial pumpage; and the capture zones achievable by various extraction scenarios.

Water quality results from the eight newly installed multiport wells and at the existing EPA MP well provided further information on the distribution of VOCs in the BPOU area. These MP wells were sampled in addition to 21 water supply wells and 4 site assessment wells to provide coverage throughout the OU. Although the analytical suites included a broad spectrum of organic and inorganic compounds, the principal constituents used as indicator chemicals were TCE, PCE, 1,2-DCA and CTC. Details of the sampling results are in Section 4. These show that the highest VOC concentrations generally occur in Subarea 1 with decreasing concentrations as one moves southwards towards Subarea 3. The highest concentrations in Subarea 3 are generally at depths of about 400-600 ft bgs for TCE and PCE. The VOCs were generally detected, horizontally and vertically, in areas consistent with the simulated flow field as modeled in the BPOU. CTC was generally detected at higher concentration in the lower intervals (below 500 bgs) of the MP wells, and at deeper screens of the water supply wells in Subarea 3.

Four pumping tests were conducted during the study. Aquifer transmissivities ranged from 140,000 to 900,000 $ft^2$/day, with equivalent hydraulic conductivities ranging from 200 to 800 ft/day. These data are consistent with other estimates of hydraulic conductivity in this area on the San Gabriel basin, and are in general agreement with the hydraulic conductivities estimated during the calibration of the numerical model.

The installation of the multiport monitoring wells provided additional information on the variation of piezometric heads in the BPOU. In general, it was found that there was very little vertical head variation throughout the depth of the aquifer; the only exception being at MW5-05 where a four foot gradient is observed. At all locations, all screens responded similarly to seasonal variations in head. The horizontal distribution in piezometric head was consistent with prior estimates.

A three-dimensional groundwater flow model was developed and calibrated for the Main San Gabriel Basin. The purpose of this modeling effort was to develop a predictive tool to evaluate the effectiveness of various proposed BPOU extraction scenarios concurrently with the simulation of the effects of temporal changes in recharge and water supply pumping operations. This groundwater flow model was previously used to evaluate the operation of the proposed BPOU Water Delivery Project for the Three Valleys Municipal Water District (CDM, 1996). As part of the modeling effort described in this report, the model was updated and recalibrated under both quasi steady-state and transient conditions. The quasi steady-state calibration was based on Water Year 1981-82 when water-level elevations in the basin were generally stable indicating relatively small changes in basin groundwater storage. The transient model calibration was based on a 12-year period extending from October 1982 through June 1994. Model calibration results indicated that the model is a very good representation of the groundwater flow system within the BPOU as demonstrated by its ability to accurately: 1) simulate both regional and local flow patterns, 2) match observed water-level elevations within 5 feet throughout the BPOU under steady-state conditions, and 3) simulate temporal water-level fluctuations of up to 60 feet per year associated with pumping and recharge stresses.

Extraction scenarios were developed to evaluate the effectiveness of various extraction well locations, depths, and pumping rates. In general, these extraction scenarios focused on obtaining the following remedial action objectives:

- Containment of groundwater with TCE concentrations greater than 50 µg/l TCE (and to the extent feasible, 5 µg/l TCE) upgradient of Subarea 1 and Subarea 3 extraction locations. TCE was used to represent the extent of the VOC plume because: TCE is the commonly occurring VOC with the highest concentration in the vicinity of the proposed extraction locations, and 2) the horizontal extent of TCE is slightly greater than PCE. Combined TCE and PCE represent the majority of the VOC mass in groundwater within the BPOU.

- Total project groundwater extraction was limited to 19,000 gpm in consideration of project constraints related to recharge capacity and MWD water supply demands described in Section 2.2.

- Groundwater extraction focused on a target depths of about 600 feet in Subarea 1 and 750 feet in Subarea 3 based on the observed vertical extent of VOC contamination presented in Section 4.

Although numerous permutations of extraction well locations, depths, and pumping rates were evaluated, five primary extraction scenarios are presented in this report. The first of these extraction scenarios, Case 1, approximates EPA's ROD remedy consisting of Subarea 1 extraction of 8,500 gpm and Subarea 3 extraction of 10,500 gpm. The second and third extraction scenarios, Cases 2 and 3, utilize the same extraction rates in Subareas 1 and 3 but attempt to incorporate the SGVWC B6 production wells into the extraction well configuration. The fourth extraction scenario, Case 4, also attempts to utilize the SGVWC B6 wells but decreases groundwater extraction in Subarea 1 to 5,500 gpm and increases extraction in Subarea 3 to 13,500 gpm to obtain better achieve containment in Subarea 3. The fifth extraction scenario, Case 5, also utilizes an extraction rate of 13,500 gpm in Subarea 3 but utilizes an additional Subarea 3 extraction well, Cluster 5B, to further improve containment in Subarea 3. Evaluation of these extraction scenarios indicated that Case 5 best achieves the remedial action objectives described above. Specifically, the Case 5 extraction scenario effectively demonstrates containment of TCE at concentrations greater than 50 µg/l in Subareas 1 and 3, and based on our judgement of existing data, we further believe that we have containment of TCE greater than 5 µg/l in Subarea 1 and Subarea 3.

In addition to the five primary extraction scenarios summarized above, the sensitivity of the model relative to achieving containment was evaluated by systematically adjusting various input parameters including extraction rates, extraction well depths, and aquifer hydraulic conductivity in the BPOU. In addition, the additive effect of increased groundwater pumping from various production wells in the vicinity of the BPOU, inclusive of Arrow, Lante, SGVWC B4, and B6, was also considered relative to achieving containment. This sensitivity evaluation indicated that Case 5 also provides the robust containment given uncertainties in aquifer hydraulic conductivities and potential variations in pumping rates associated with extraction system operation. Additionally, water supply pumping from other production wells further improves the containment achieved with Case 5.

# 7

# Section Seven

# Draft - Section 7
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See Document # 29672